CHILDREN PLAYING WITH FIRE

Ben Evarts

November 2011

National Fire Protection Association
Fire Analysis and Research Division

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Abstract

Between 2005 and 2009, an average of 56,300 child-playing fires were reported to U.S. municipal fire departments per year. These fires caused annual averages of 110 civilian deaths, 880 civilian injuries, and $286 million in property damage. Structure fires accounted for 22% of fires, but 98% of civilian deaths, and 93% of property damage. Outside or unclassified fires accounted for 76% of the fires, and vehicle fires for 2%. Because most loss of life and damage occur in structure fires, and specifically home fires, the report focuses on home fires. Half of home playing structure fires were started by cigarette lighters, 19% by matches, and 6% by candles. Forty percent of fires began in the bedroom, and mattress or bedding was the item first ignited in 24% of home playing structure fires. Forty-four percent of home playing structure fires were started by a child between the ages of 4 and 6, which is different from outside or unclassified fires, where two out of five of fires were started by someone between the ages of 10 and 12.

These estimates are based on data from the U.S. Fire Administration's (USFA's) National Fire Incident Reporting System (NFIRS) and the National Fire Protection Association's (NFPA's) annual fire department experience survey.

Keywords: fire statistics, child playing, fire-play, fire setting, intentional fires, arson

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We are also grateful to the U.S. Fire Administration for its work in developing, coordinating, and maintaining NFIRS.

For more information about the National Fire Protection Association, visit www.nfpa.org or call 617-770-3000. To learn more about the One-Stop Data Shop go to www.nfpa.org/osds or call 617-984-7443.

Copies of this analysis are available from:

National Fire Protection Association
One-Stop Data Shop
1 Batterymarch Park
Quincy, MA 02169-7471
www.nfpa.org
e-mail: osds@nfpa.org
phone: 617-984-7443

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Executive Summary

Between 2005 and 2009, an average of 56,300 child-playing fires were reported to U.S. municipal fire departments per year. These fires caused annual averages of 110 civilian deaths, 880 civilian injuries, and $286 million in property damage. Structure fires accounted for 22% of fires, but 98% of civilian deaths, and 93% of property damage. Outside or unclassified fires accounted for three-quarters (76%) of the fires, and vehicle fires for 2%.

Two-thirds (66%) of child-playing structure fires occurred in residential properties, with 62% in homes. Twelve percent began in outside or special properties (these include tunnels, bridges, vacant lots, etc.), and 8% began in educational properties.

Most deaths, injuries, and damage from child playing fires occur in home structure fires. An average of 7,670 home structure fires per year caused by child-playing were reported between 2005 and 2009, causing annual averages of 100 civilian deaths, 750 civilian injuries, and $192 million in property damage. They are more common during the month of July, and peak between the hours of 3 p.m. and 6 p.m.

Half of home playing structure fires had a lighter as their heat source, and matches were the heat source in 19% of fires. Fires started by lighters or matches caused 92% of civilian deaths.

Forty percent of these fires began in the bedroom, 8% in the kitchen and 6% in a common room, living room, family room or den. A mattress or bedding was the item first ignited in 24% of these fires, 10% began with magazines, newspapers, or writing paper and 9% began with rubbish, trash, or waste.

The majority of child-playing structure fires in homes (83%) were started by males (when age was coded as a human factor contributing to ignition). Forty-four percent of the fires were started by a child between the ages of 4 and 6. Older children were more likely to start fires outside as two of five outside or unclassified fires were started by a child between the ages of 10 and 12.

Outside or unclassified child-playing fires (excluding trash or rubbish fires) peak during the afternoon hours, between 3 p.m. and 6 p.m. Nearly one-quarter of these fires were started during the month of July, mostly around the July 4th holiday. Fireworks were the heat source in one-third (33%) of all non-trash outside or unclassified fires caused by child playing, lighters were the heat source in 25%, and matches were the heat source in 21%.

Males were even more likely to be responsible for these fires than in home playing structure fires, as 93% of child-playing outside or unclassified (trash or non-trash combined) fires were started by males (when age was coded as a human factor contributing to ignition).

Public educators (and the general public) can use the following safety tips to help prevent fires that involve playing:

- Store matches and lighters out of children's reach and sight, up high, preferably in a locked cabinet.
- Never use lighters or matches as a source of amusement for children; they may imitate you.

- If your child expresses curiosity about fire or has been playing with fire, calmly but firmly explain that matches and lighters are tools for adults only.
- Use only lighters designed with child-resistant features. Remember child-resistant does not mean child proof.
- Teach young children and school-age children to tell an adult if they see matches or lighters.
- Never leave matches or lighters in a bedroom or any place where children may go without supervision.
- If you suspect your child is intentionally setting fires or unduly fascinated with fire, get help. Your local fire department, school, or community counseling agency can put you in touch with trained experts.

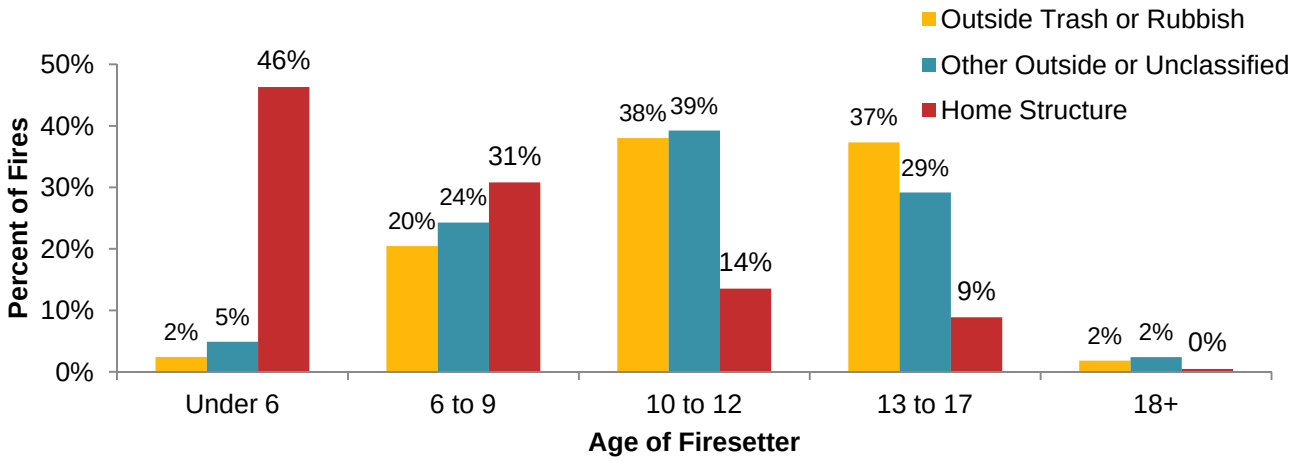
One-Stop Data Shop
Fire Analysis and Research Division
One Batterymarch Park, Quincy, MA 02169
Email: osds@nfpa.org
www.nfpa.org

Children Playing With Fire Fact Sheet

Fires started by children playing accounted for an average of 56,300 fires with associated losses of 110 civilian deaths, 880 civilian injuries and $286 million in direct property damage per year between 2005 -2009. These included:

- 25,100 outside or unclassified fires
- 17,900 outside trash or rubbish fires
- 12,500 structure fires
- 900 vehicle fires

Structure Fires Caused by Children Playing
By Age (when Age Cited as a Human Factor Involved in Ignition) 2005-2009



Younger children were more likely to set fires in homes, while older children and teenagers are more likely to set fires outside

- Males were are more likely to engage in fire-play than females, as 83% of home structure fires and 93% of outside or unclassified fires were set by boys when age was coded as a factor
- Lighters were the heat source in half (50%) of child-playing fires in homes
- 40% of child-playing home fires began in a bedroom

PARENTAL INVOLVEMENT COMBINED WITH POSITIVE MESSAGING WORKS FOR CHILDREN:
NFPA recently contracted with the Johns Hopkins Center for Injury Research and Policy to study the best way to communicate safety messages to children 4-9 years old. The study found that videos featuring positively framed messages are more effective than negatively framed messages and that when parents discuss media content with their children, the children learn more. You can learn more at http://www.nfpa.org/messaging

Additional resources can be found at www.nfpa.org

Children Playing with Fire

Between 2005 and 2009, an average of 56,300 child-playing fires were reported to U.S. municipal fire departments per year. These fires caused annual averages of 110 civilian deaths, 880 civilian injuries, and $286 million in property damage. Structure fires accounted for 22% of fires, but 98% of civilian deaths, and 93% of property damage. Outside or unclassified fires accounted for three-quarters (76%) of the fires, and vehicle fires for 2%. (See Table A below)

Table A.
Child-Playing Fires, by Incident Type: 2005-2009 Annual Averages

Incident Type	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Outside or Unclassified Fires	42,970	(76%)	0	(1%)	70	(8%)	$3	(1%)
Outside or unclassified fires (excluding outside trash or rubbish fires)	25,100	(45%)	0	(1%)	60	(7%)	$3	(1%)
Outside trash or rubbish fires	17,900	(32%)	0	(0%)	10	(1%)	$1	(0%)
Structure fires	12,500	(22%)	100	(98%)	800	(91%)	$264	(93%)
Non-confined	8,500	(15%)	100	(98%)	790	(89%)	$264	(92%)
Confined	3,900	(7%)	0	(0%)	20	(2%)	$0	(0%)
Vehicle fires	900	(2%)	0	(0%)	10	(1%)	$18	(6%)
Total	56,300	(100%)	110	(100%)	880	(100%)	$286	(100%)

Structure fires occurred in a wide variety of property types. Two-thirds (66%) of structure fires, and the associated damage, occurred in residential properties. Outside and special properties (like bridges and vacant lots), educational, and storage properties were also common occupancies for these fires, as shown in Table B below.

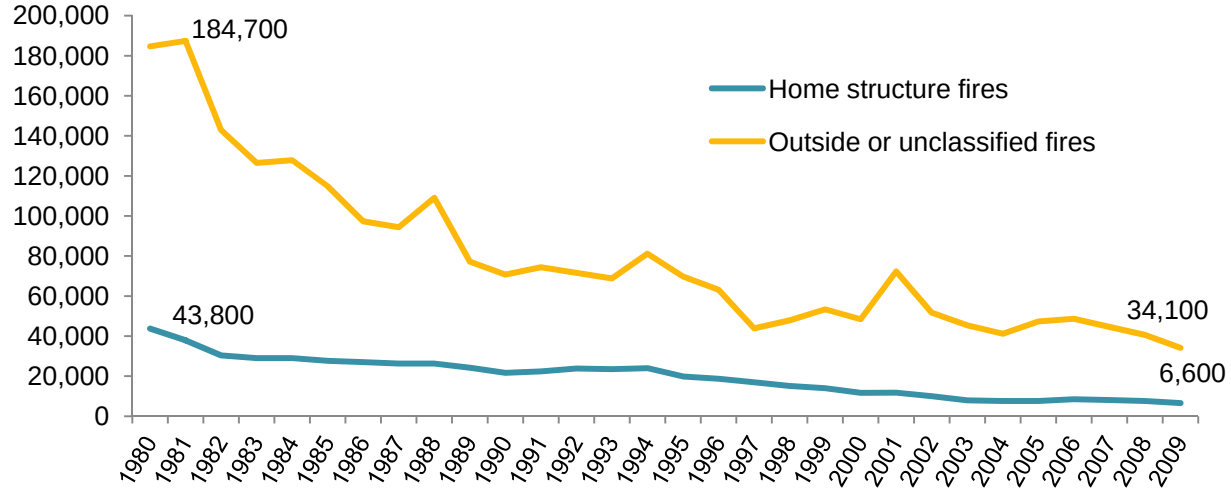
Table B.
Child-Playing Structure Fires, by Property Use: 2005-2009 Annual Averages

Property Use	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Residential	8,200	(66%)	100	(99%)	760	(95%)	$209	(79%)
Homes	7,700	(62%)	100	(97%)	750	(94%)	$192	(73%)
Outside or special property	1,500	(12%)	0	(0%)	0	(1%)	$2	(1%)
Educational	1,000	(8%)	0	(0%)	10	(1%)	$26	(10%)
Storage	900	(7%)	0	(1%)	10	(2%)	$10	(4%)
Assembly	400	(3%)	0	(0%)	0	(0%)	$2	(1%)
Mercantile or business	300	(2%)	0	(0%)	0	(0%)	$13	(5%)
Other known property type	200	(2%)	0	(1%)	10	(1%)	$2	(1%)
Total	12,500	(100%)	100	(100%)	800	(100%)	$264	(100%)

In 2009, an estimated 45,500 fires involving fire-play were reported to U.S. municipal fire departments, with associated losses of 70 civilian deaths, 840 civilian injuries, and $242 million in property damage.

Overall, fires caused by child-playing have declined 82% from a high of 249,800 in 1980. This is an across the board decline seen for all different types of fires, as home structure fires have decreased 85%, non-home structure fires have decreased 75%, and vehicle fires, outside or unclassified fires have both decreased by more than 80% from 1980. See Table 1 and Figure 1 below.

Figure 1.
Child-Playing Fires, by Year
1980-2009



IDENTIFYING FIRES DUE TO PLAYING WITH FIRE

This report contains data from the U.S. Fire Administration's (USFA) National Fire Incident Reporting System (NFIRS) Version 5.0. Factor contributing to ignition code 19 is defined as: "Playing with heat source; including playing with matches, candles, and lighters and bringing combustibles into a heat source."

Prior to Version 5.0 the counterparts to factor contributing to ignition code 19 were two ignition factors which both paired "playing" with "child". In Version 5.0 the word child was removed and the current code covers all fire-play, regardless of firesetter age. An analysis of who is starting these fires shows that in most cases a child was involved. The term "child-playing" is used throughout this report, but it is possible that some of these fires were not started by children.

Estimates of children playing with fire are based on all fires coded as playing with heat source plus a proportional share of fires with factor contributing to ignition coded as unknown or none. NFPA's annual fire department survey is used with NFIRS to calculate national estimates. See Appendix A for more information on NFIRS and the methodology used in this analysis. Only fires reported to municipal fire departments are included in these statistics.

NFIRS Version 5.0 has six categories of confined structure fires, including fires confined to a cooking vessel, confined chimney or flue fires, confined incinerator fires, confined fuel burner or boiler fires, confined commercial compactor fires, and confined trash fires. Although causal information is not required for these incidents, it is provided in some cases. Confined fires are analyzed separately from non-confined fires.

Similarities and differences between fires coded as involving playing, and those coded as intentional

"Playing with heat source" is one of the choices in the NFIRS field "Factor Contributing to Ignition"; "Intentional" is a choice in the field "Cause of Ignition". There is some overlap between these two groups of fires, of the total fires that were intentional and/or involved playing, most did not involve playing.

Child-playing was not cited in 83% of 2005-2009 set fires (the term "set fire" is used to mean a fire started by playing or started intentionally), 79% of associated civilian deaths, 52% of associated civilian injuries, and 81% of associated direct property damage. Child-playing fires are more concentrated in homes, but even in homes, child-playing was not cited in 77% of set fires and 75% of associated civilian deaths. (See Table 2)

The child-playing share of set fires (playing and/or intentional, incendiary, or suspicious) was higher 25 years ago. In 1980-1984, child-playing was cited in 30% of set fires (compared to 17% in 2005-2009) and 48% of associated civilian deaths (compared to 21% in 2005-2009). Between 1980-1984 and 2005-2009, a number of changes occurred:

- NFIRS coding was changed to permit fires to be recorded as both intentional and playing; this would be expected to increase the percentage of set fires recorded as playing (and increase the percentage recorded as intentional).
- NFIRS coding was changed so that "suspicious" was no longer an option for reporting; this would be expected to decrease the percentage of fires reported as intentional and thereby increase the child-playing percentage.
- NFIRS coding was changed so that "child playing" was replaced by the less restrictive "playing"; this would be expected to increase the playing percentage.
- The U.S. Consumer Product Safety Commission introduced a child-resistance requirement for lighters; this would be expected to decrease the playing percentage.

Only the last of these changes would have been expected to produce the decline in playing percentage that actually occurred for fires and civilian deaths.

There are a number of statistics available on the juvenile share of set fires:

- As noted above, fires involving playing accounted for only 17% of total 2005-2009 set fires (intentional and/or playing).
- Fireplay or curiosity was cited as a suspected motive in 25% of 2005-2007 reported intentional fires (based on fires for which the arson module was completed), 38% of reported intentional fires for which the cases were closed, and 23% of reported intentional fires that were cases closed by arrest.[1]
- For fires that were playing and not intentional and for which age was a factor, 99% involved firestarters under age 18. For fires that were playing and intentional and for which age was a factor, 99% involved firestarters under age 18. For fires that were intentional and not playing and for which age was a factor, 84% involved firestarters

[1] John R. Hall, Jr., *Intentional Fires*, NFPA Fire Analysis and Research Division, Quincy, MA, June 2010, Table 8.

under age 18. However, the designation of age as a factor would be expected to select for juveniles, and so these percentages – particularly for fires that were intentional and not playing, where only 2% of fires cited age was a factor – are probably overstated.

- Juveniles accounted for roughly 47% of arson arrests in 2005-2009.[2] If applied to the 94% of set fires that were intentional, whether or not they also involved playing, and added to the 6% of set fires that involved playing but were not intentional, this results in a combined 51% of firestarters being juveniles.

This report focuses on fires where "playing with fire" was coded as a factor contributing to ignition, whether or not it was also coded as "intentional" or it was considered "arson". The report is divided into three sections, one focusing on home structure fires, one focusing on outside or unclassified fires, and one section regarding prevention of children playing with fire. Vehicle fires are not included due to limited data.

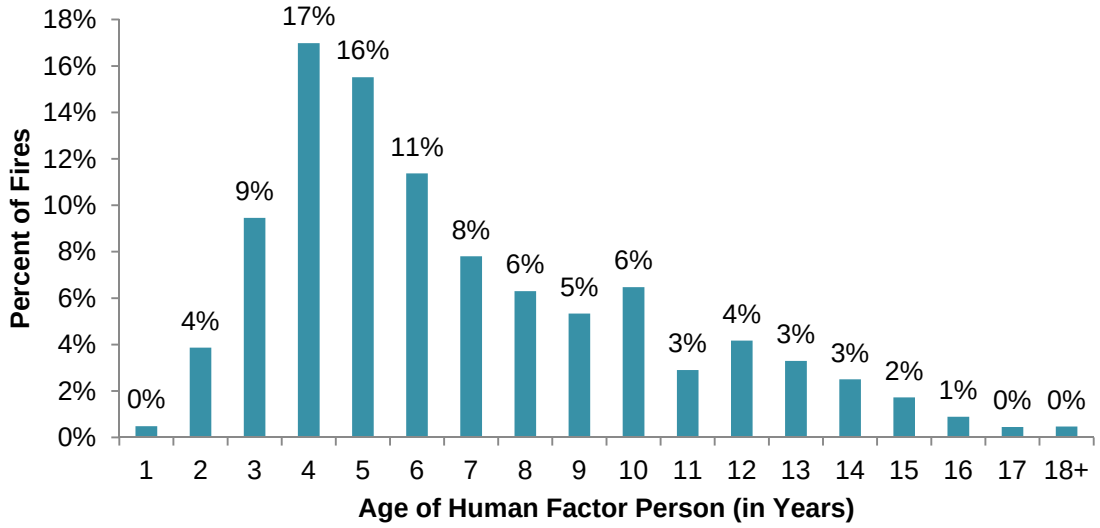
[2] "Table 38: Crime in the United States." FBI, 09/2010. Web. 24 Oct 2011. <http://www2.fbi.gov/ucr/cius2009/data/table_38.html>.

Section 1:
Home Structure Fires Caused by Children Playing With Fire

Children playing with fire were responsible for an average of 7,670 home structure fires per year between 2005 and 2009.
Playing with fire was the cause of an estimated annual averages of 7,670 structure fires, 100 civilian deaths, 750 civilian injuries, and $192 million in direct property damage in homes from 2005 to 2009.

Boys are much more likely than girls to be involved in fires caused by playing.
When age was coded as a factor in the fire, males were involved in 83% of home structure fires caused by playing. Fires set by males also accounted for 88% of the property damage. The median age of the person involved (when age was coded as a factor) was 6. (See Tables 3 and 4)

Figure 2.
Home Structure Fires Caused by Playing with Fire
(When Age Considered a Factor in Ignition)
By Age of Human Factor Person 2005-2009



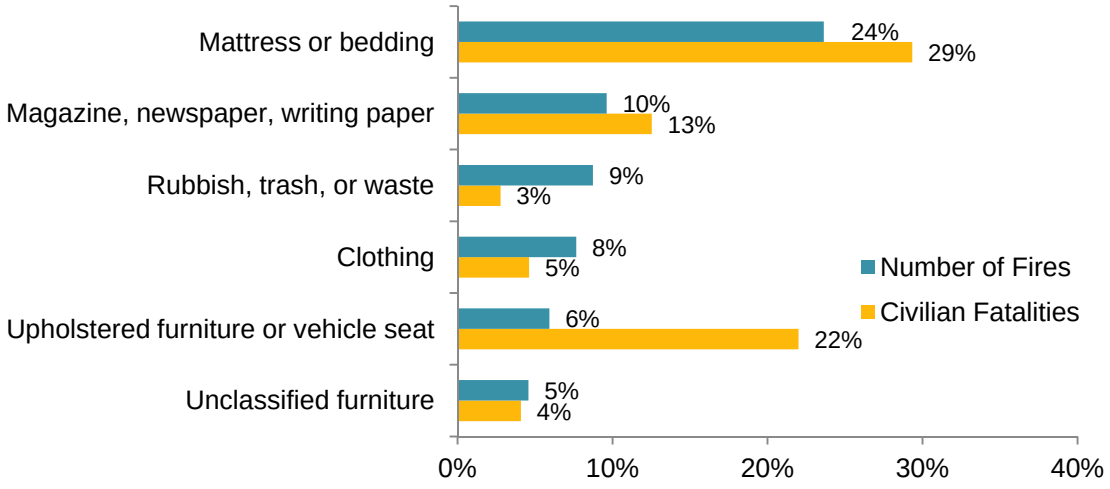
These fires were more common in the month of July, and during the afternoon hours.
Table 5 shows that these fires peaked in the month of July (12% of fires) and were relatively evenly spaced throughout the rest of the year. This spike in July is due to an increase in fires caused by playing with fireworks, which are common around the July 4th holiday. Home structure fires caused by playing with fire peak at 4:00-5:00 p.m. and are generally more common between the hours of 2:00 p.m. and 7:00 p.m. (See Table 6). No clear patterns were seen by day of week (See Table 7).

Lighters were the most common heat source in home structure fires caused by playing.
Half (50%) of these fires were coded as having a lighter as the heat source. Matches were coded as the heat source in one-fifth (19%) of fires, and candles were the heat source in 6%. Fireworks were the heat source in 5% of these fires. (See Table 8)

The bedroom was the most common area of origin for these fires.
Forty percent of playing home fires began in the bedroom, and these fires were responsible for half (50%) of deaths and 58% of injuries. Eight percent of these fires began in the kitchen. Six percent began in the living room, family room, or den; these fires were responsible for 26% of civilian deaths. (See Table 9)

Mattress or bedding was the most common item first ignited in fires caused by playing.
One-quarter (24%) of playing fires began with mattresses or bedding, and 10% began with a magazine, newspaper, or writing paper. Rubbish or trash was first ignited in 9% of these fires, and clothing in 8%. Upholstered furniture was the item first ignited in 6% of fires but 22% of deaths. (See Figure 3 and Table 10)

Figure 3.
Home Structure Fires and Deaths Caused by Children Playing
By Leading Items First Ignited 2005-2009



Almost three-quarters of the home structure fires caused by playing were confined to the room of origin.
Four out of ten of these fires (40%) were confined to the object of origin (defined either by incident type or the "Fire spread" field in NFIRS 5.0). Nearly one-third (31%) were confined to the room of origin. The 29% of fires that spread beyond the room of origin were responsible for 79% of the civilian fire deaths. (See Table 11).

Section 2:
Outside or Unclassified Fires Caused by Children Playing With Fire

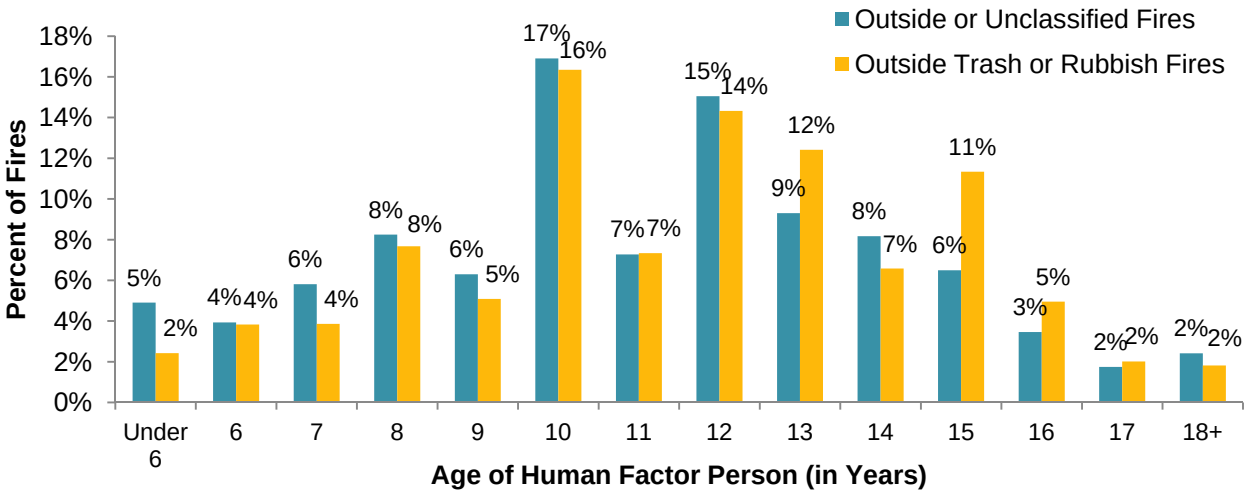
An average of 42,970 outside or unclassified fires per year involved playing with fire between 2005 and 2009.
These fires were responsible for annual averages of one civilian death, 70 civilian injuries and $3 million in direct property damage. Four in ten (42%) of these fires were defined as outside trash or rubbish fires by the local fire department; these incident types have limited reporting requirements. Because of the limited reporting required for these incidents, they have been analyzed separately from the remainder of outside or unclassified fires in this report. See Table C below.

Table C.
Outside or Unclassified Child-Playing Fires, by Incident Type:
2005-2009 Annual Averages

Incident Type	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Total outside or unclassified fires	42,970	(100%)	1	(100%)	70	(100%)	$3	(100%)
Outside or unclassified fires (excluding trash or rubbish fires)	25,090	(58%)	1	(100%)	60	(86%)	$3	(84%)
Outside trash or rubbish fires	17,880	(42%)	0	(0%)	10	(14%)	$1	(16%)

Males are more likely to be involved in outside or unclassified fires that involve playing when age is coded as a factor, as are children between the age of 10 and 15.
When age was cited as a factor involved in ignition, the vast majority of fires (93% of trash or rubbish fires, and 94% for all other outside or unclassified fires) involved a male (See Tables 12A and 12B). These fires are also more likely to involve children who are between the ages of 10 and 12 (38% of trash or rubbish fires and 39% of other outside or unclassified fires involved someone in this age group). The age of fire setters for outside fires is generally older outside than it is in homes. (See Figure 4 below and Tables 13A and 13B).

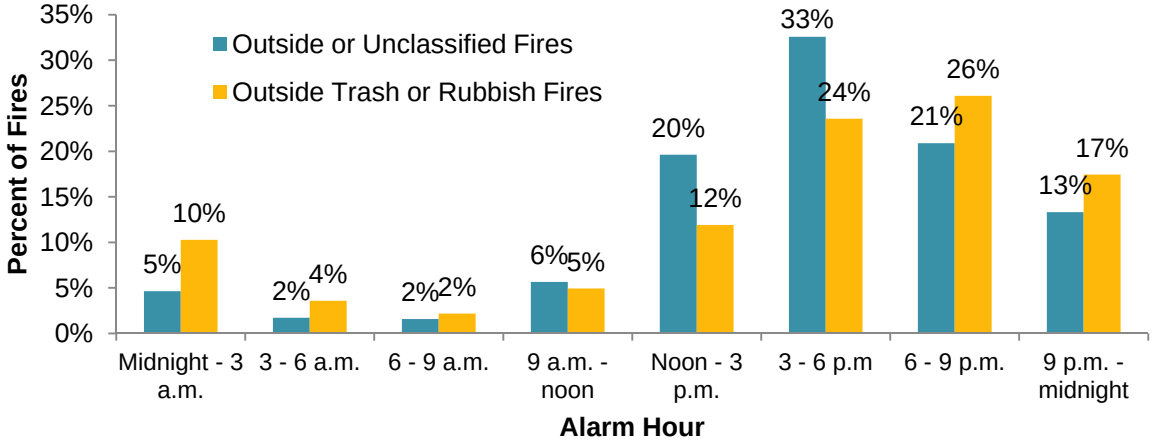
Figure 4.
Outside or Unclassified Fires Caused by Playing with Fire
By Age (in Years) of Human Factor Person 2005-2009



Outside or unclassified fires caused by playing are more common in July than any other month.

Table 14A shows that nearly one-quarter (24%) of outside or unclassified fires (excluding outside trash and rubbish fires) occur during the month of July, due to the prevalence of fireworks during the July 4th holiday. Outside trash or rubbish fires are somewhat less common during the month of July (See Table 14B). Outside or unclassified fires caused by playing were more common during the afternoon hours, though there were differences between trash or rubbish fires, which occur later at night, and other outside or unclassified fires. (See Tables 15A and 15B and Figure 5 below). These fires were slightly more common on the weekends than other days of the week. (See Table 16A and 16B).

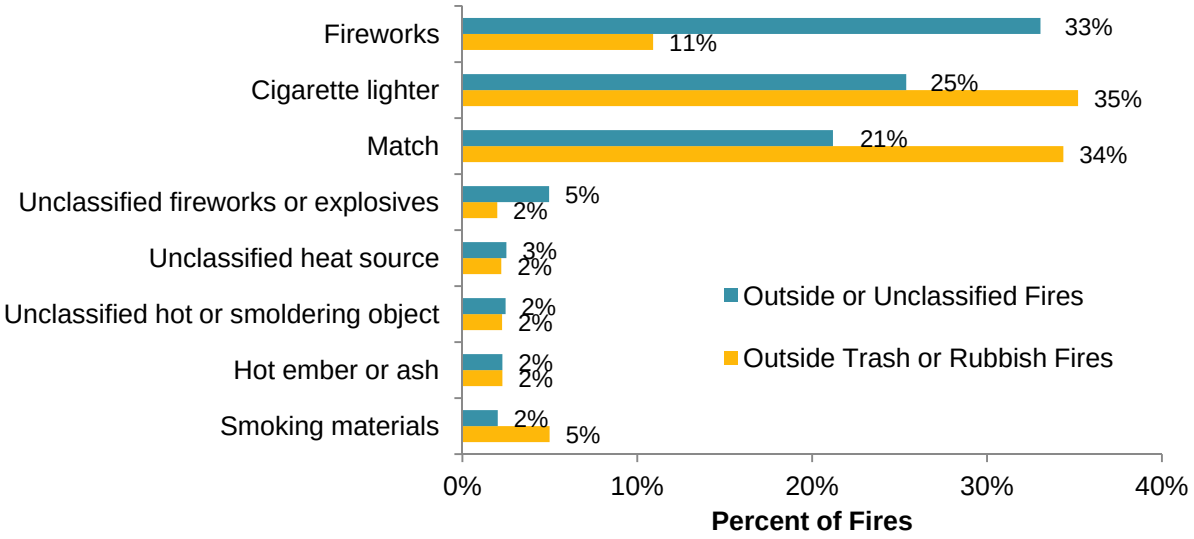
Figure 5.
Outside or Unclassified Fires Caused by Playing with Fire
By Hour 2005-2009



Fireworks were a less common heat source in outside trash or rubbish fires than other outside fires.

Table 17A shows that fireworks were the most common heat source in outside or unclassified fires (excluding outside trash or rubbish fires) started by playing. One-quarter of these fires (25%) began with a lighter, and these fires were responsible for 51% of the property damage. One in five fires (21%) began with a match. Among outside trash and rubbish fires, 35% began with a lighter, and 34% began with a match. Eleven percent began with fireworks. (See Table 17B and Figure 6 below)

Figure 6.
Outside or Unclassified Fires Caused by Playing with Fire
By Heat Source 2005-2009



In most outside or unclassified fires (excluding trash or rubbish fires) where playing with fire was involved, the item first ignited was light vegetation, including grass.

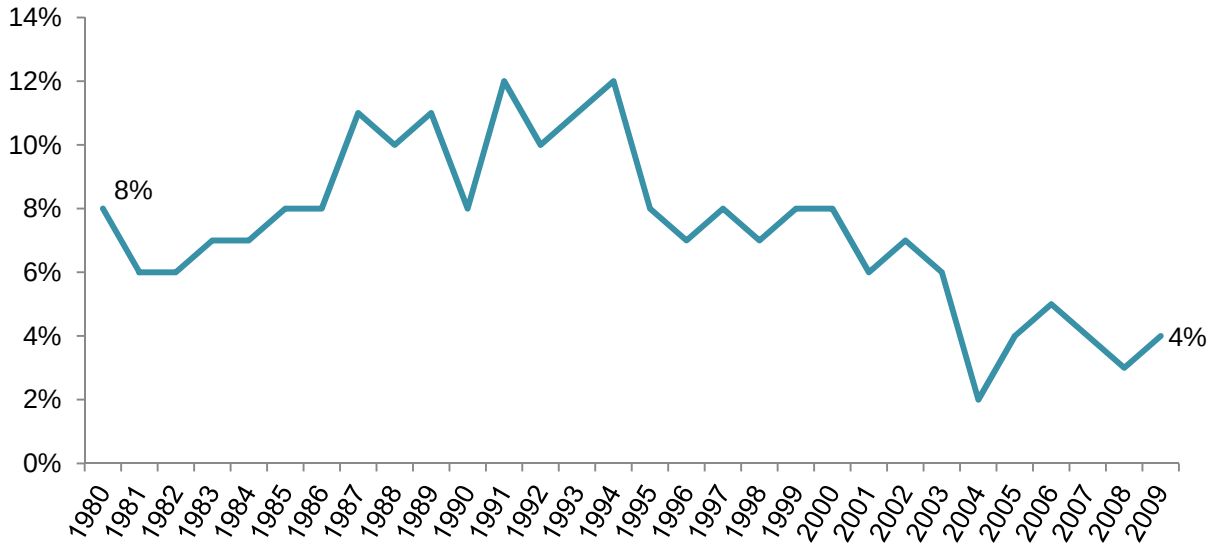
Three in five (61%) of these fires began when light vegetation, including grass, was ignited. Nine percent began with heavy vegetation, including trees. Flammable and combustible liquids or gases were first ignited in 3% of fires, but these fires caused 33% of the injuries. (See Table 18A) Table 18B shows that in outside trash or rubbish fires caused by playing, rubbish trash or waste was coded as the item first ignited 38% of the time. Twelve percent of these fires began with magazine, newspaper, or writing paper, and 9% began with light vegetation.

Section 3:
Preventing Fires Caused by Playing

Child-playing fires over time

Figure 6 shows that the child-playing percentage of total home structure fire deaths rose fairly steadily from 1980 to 1994, the last year before full implementation of the U.S. Consumer Product Safety Commission's child-resistant lighter requirement. The percentage immediately dropped in 1995 and has continued to drop ever since. This is as clear an indication as we have of the building need for that CPSC requirement and the quick and sustained impact of the requirement after it was introduced.

Figure 7.
Child-Playing Share of Total Home Structure Fire Civilian Deaths

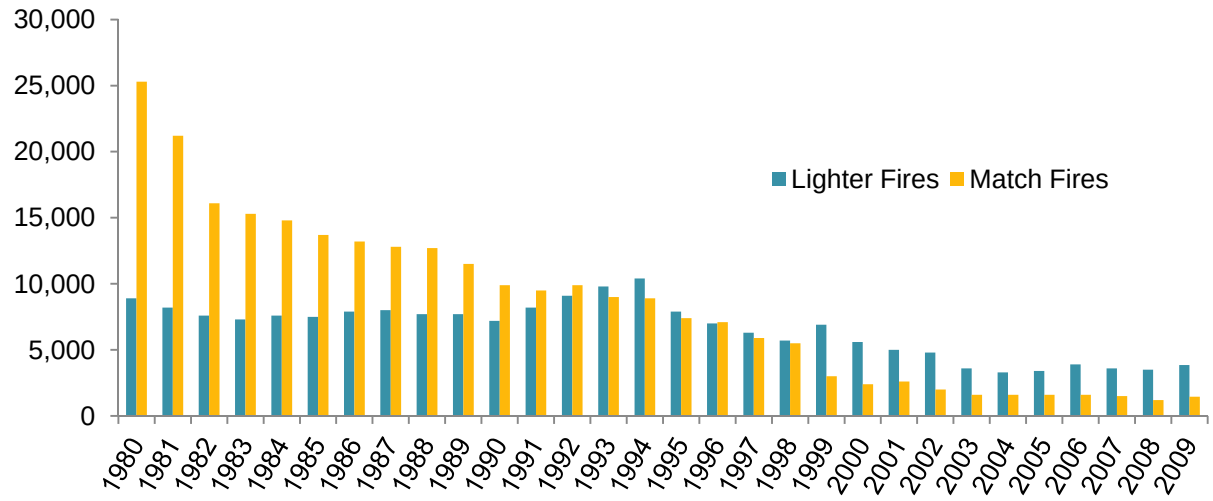


Source: NFIRS and NFPA survey.

Most child-playing home fires are started with lighters or matches.

Table 8 shows that in 2005-2009, lighters and matches accounted for 69% of child-playing home structure fires, 92% of associated civilian deaths, 79% of associated civilian injuries, and 71% of associated direct property damage. Table 17 Also shows that in 2005-2009, lighters and matches accounted for 47% of child-playing non-trash outside or unclassified fires, no associated civilian deaths, 68% of associated civilian injuries, and 62% of associated direct property damage. The principal reason why these percentages are lower than the home percentages is that fireworks, the fourth leading heat source for child-playing home structure fires with 5% of the total, is the leading heat source for child-playing non-trash outside or unclassified fires with 33% of the total.

Figure 8.
Child-Playing Home Structure Fires Involving Matches or Lighters
1980-2009



In 1994, the Consumer Product Safety Commission (CPSC) set a mandatory safety standard requiring most manufactured or imported cigarette lighters to be child-resistant. The standard requires that lighters resist the efforts of 85% of the children to operate them in a specified test. More than 95% of the estimated half-billion lighters purchased annually in the U.S. are covered by the standard.[3] In an evaluation of the effectiveness of the standard performed in 2002, CPSC found a 58% reduction in fires caused by children younger than five, compared to children over the age of five.[4]

From 1980 to 2005-2009, the combined lighter and match share of child-playing home structure fires declined from 78% to 69%. All of this decline occurred after the introduction of the 1994 CPSC child-resistance requirement. These fires are still responsible for 92% of home playing fire deaths. A pattern that may be related is that candles, fireworks, and unclassified or unknown-type hot or smoldering object all showed increased shares of home child-playing fires between 1984-1998 and 2005-2009, collectively rising from 9% to 13% of the total, but showing essentially no change collectively in their share of associated civilian deaths.

[3] U.S. Consumer Product Safety Commission, "CPSC Issues Final Rule on Child-Resistant Lighters," *News from CPSC*, June 9, 1993, www.cpsc.gov/CPSCPUB/PREREL/prhtml193/93080.html.
[4] L.E. Smith, M.A. Greene, H.A. Singh, "Study of the Effectiveness of the US Safety Standards for Child Resistant Cigarette Lighters," *Injury Prevention*, www.injuryprevention.com, September 2002.

Child-playing lighter fires in homes increased from 1980 to 1994, then declined from 1994 to 2004 and then leveled off, while child-playing match fires and child-playing fires not involving matches or lighters declined from 1980 to 1993 and from 1993 until the mid 2000's when they leveled off as well.

If there is some truth to the speculation that the 1994 CPSC child-resistant lighter requirement also raised awareness of the need to keep matches and lighters out of reach and out of sight of children, then we might expect to see parallel declines in child-playing home fires involving lighters or matches, but not such large declines for child-playing home fires involving other heat sources, where such educational messages do not clearly apply.

From 1980 to 1993, child-playing home lighter fires increased by 10%, while child-playing home match fires declined by 64%. In 1980 there were nearly three (2.9) child-playing home match fires for every child-playing home lighter fire. By 1993, the ratio had fallen to less than even (0.9-to-1). From 1993-1997 to 2005-2009, child-playing home lighter fires declined by 53%, while child-playing home match fires declined by 81%. In 2005-2009, there were nearly three (2.6) child-playing home lighter fires for every child-playing home match fire.

It is useful to compare these trends to the trend for child-playing home fires not involving lighters or matches. From 1980 to 1993, while the lighter portion was increasing by 10% and the match portion was declining by 64%, child-playing home fires involving other heat sources declined by 51%. Matches and lighters accounted for a combined 78% of child-playing home structure fires in 1980 and 80% in 1993 but only 69% from 2005 to 2009.

All these statistics suggest other factors at work besides the CPSC child-resistant lighter requirement. Some of these other factors may be unrelated to anything specific about child-playing fires and instead be related to the large decline in home structure fires from all causes. One of those other factors may be related to relative ease of access to and ease of use of different heat sources by children, both of which have been affected by efforts to educate children not to play with fire and to educate parents and other caregivers to reduce visibility and access for children to matches and lighters, with less emphasis given to other heat sources used in fire-play, such as cigarettes, fireworks, and candles, as well as kitchen ranges, space heaters, and microwave ovens. Access and availability may also have been affected by the steady decline in cigarette consumption, which may have reduced demand for matches and lighters, and by any shift in usage from matches to lighters or from lighters to matches.

Finally, it is possible that the heightened attention to lighters over matches as part of the child-playing fire problem may have shifted fire reporting practices in ambiguous circumstances so that more child-playing match fires are being misreported as child-playing lighter fires or fewer child-playing lighter fires are being misreported as child-playing match fires.

Other than lighters, the leading types of equipment involved in child-playing home fires are cooking and heating equipment. Together, they accounted for only 7% of child-playing home structure fires and no reported deaths.

Safety Message Effectiveness for Children

Positive messages combined with parental discussion increase safety message effectiveness for children.
NFPA contracted with the Johns Hopkins Center for Injury Research and Policy to study the best way to communicate safety messages to children 4-9 years old. The study sought to understand whether messages should be communicated positively (by focusing on the positive outcome of doing the appropriate behaviors) or negatively (by focusing on the negative outcomes of doing the inappropriate behaviors). Overall conclusion and recommendations for safety programming from the report:

- For both younger and older children watching positively framed videos was more effective than watching negatively framed videos. Parents also rated positively framed videos as more effective. Thus, safety messages should focus on depicting the positive outcomes that result from engaging in safety behaviors. Communicating safety messages by depicting the negative consequences of unsafe behaviors were not as effective as communicating the positive outcomes of safe behavior.

- When parents discuss media content with their children, children learn more. These parental mediation effects were maximized when parents were provided with discussion guidelines. When parents were simply asked to discuss the videos with their children, without being given specific guidelines on how to do so, outcomes were less favorable. Parents need assistance with how to discuss media content with their children.

- Overall, findings from this research suggest that the impact of safety messages on children will be greatest when messages are framed positively, parents are encouraged to discuss these messages with children, and parents are provided with discussion guidelines.

- Even though this study used parents (or legal guardians), study findings will likely generalize to teachers and other adults who discuss media content with children. Thus, if safety videos are to be developed for use in schools, our findings indicate that such videos should be accompanied with guides to assist teachers.

The executive summary and full report are available at www.nfpa.org/messaging

Table 1.
Child-Playing Fires, 1980-2009
Fires Reported to U.S. Fire Departments

A. Fires

Year	Home Structure		Non-Home Structure		Total Structure		Vehicle	Other Outside or Unclassified	Outside Trash or Rubbish	All Outside Fires	Total Fires
1980	43,800		16,600		60,400		4,700			184,700	249,800
1981	37,900		17,700		55,600		3,800			187,400	246,800
1982	30,400		14,100		44,500		3,600			142,900	190,900
1983	29,000		11,700		40,800		3,000			126,500	170,200
1984	29,000		11,100		40,000		2,900			127,800	170,700
1985	27,700		9,300		36,900		2,100			114,800	153,800
1986	27,000		8,500		35,500		2,100			97,300	134,800
1987	26,300		8,100		34,300		2,100			94,400	130,900
1988	26,300		7,300		33,500		1,900			109,100	144,500
1989	24,200		5,800		29,900		1,500			77,200	108,600
1990	21,700		4,700		26,400		1,400			70,700	98,500
1991	22,400		5,000		27,500		1,400			74,400	103,300
1992	23,800		5,500		29,300		1,200			71,600	102,000
1993	23,500		4,800		28,300		1,300			68,800	98,400
1994	24,000		5,500		29,500		1,500			81,200	112,100
1995	19,800		5,100		24,900		1,300			69,800	96,000
1996	18,700		4,300		23,000		1,200			63,100	87,300
1997	17,000		3,100		20,300		800			43,900	65,100
1998	15,100		3,600		18,700		900			47,900	67,500
1999	14,000	(13,600)	4,700	(3,000)	18,700	(16,700)	1,300	37,500	16,000	53,400	73,400
2000	11,700	(11,200)	3,800	(2,900)	15,600	(14,100)	1,400	33,600	14,800	48,400	65,300
2001	11,800	(10,800)	4,900	(3,600)	16,600	(14,400)	1,400	35,900	36,300	72,300	90,300
2002	10,000	(8,900)	3,700	(2,800)	13,700	(11,800)	800	31,900	19,800	51,700	66,300
2003	7,900	(6,900)	3,700	(2,300)	11,600	(9,200)	800	26,700	18,700	45,400	57,800
2004	7,600	(6,500)	3,200	(2,000)	10,900	(8,500)	800	21,000	20,200	41,200	52,900
2005	7,600	(6,400)	4,900	(2,100)	12,400	(8,500)	900	28,600	18,700	47,300	60,600
2006	8,500	(7,000)	6,000	(2,300)	14,500	(9,300)	1,100	28,700	19,900	48,700	64,300
2007	8,100	(6,800)	4,900	(2,400)	13,000	(9,200)	1,000	25,600	19,000	44,600	58,600
2008	7,600	(6,200)	4,500	(2,300)	12,000	(8,500)	800	23,100	17,500	40,600	53,500
2009	6,600	(5,200)	4,100	(1,900)	10,700	(7,100)	700	20,000	14,100	34,100	45,500

Source: NFIRS and NFPA survey. Estimates for 1999-2009 are based on data collected originally in NFIRS 5.0 only. Due to the smaller share of NFIRS data collected in 1999-2001, statistics for these years should be viewed with caution. Inflation adjustments were based on Table No. 723, "Purchasing Power of the Dollar: 1950 to 2009," U.S. Census *Bureau's Statistical Abstract of the United States: 2011*, 130th Edition, 2011. Numbers in parentheses exclude fires reported as a "confined fire" incident type.

Table 1.
Child-Playing Fires, 1980-2009
Fires Reported to U.S. Fire Departments

B. Civilian Deaths

Year	Home Structure		Non-Home Structure		Total Structure		Vehicle	Outside or Unclassified Fires	Outside Trash or Rubbish Fires	All Outside Fires	Total Deaths
1980	430		10		440		10			0	440
1981	300		20		320		0			0	330
1982	280		10		290		0			0	290
1983	310		20		330		10			0	330
1984	300		10		310		0			0	310
1985	390		30		420		0			0	430
1986	380		10		390		0			10	400
1987	490		10		500		0			0	500
1988	510		0		510		10			0	520
1989	460		0		460		0			0	470
1990	330		20		350		10			0	350
1991	430		30		460		0			0	460
1992	370		0		370		10			0	380
1993	400		10		410		0			0	410
1994	410		0		410		0			0	410
1995	300		0		300		10			0	300
1996	280		0		280		0			0	280
1997	270		10		280		0			0	280
1998	220		0		220		10			0	230
1999	230	(230)	0	(0)	240	(240)	0	10	0	10	250
2000	270	(270)	0	(0)	270	(270)	0	10	0	10	280
2001	200	(200)	20	(20)	220	(220)	0	0	0	0	220
2002	200	(200)	0	(0)	200	(200)	10	0	0	0	210
2003	180	(180)	160	(160)	350	(350)	0	0	0	0	350
2004	80	(80)	10	(10)	90	(90)	10	0	0	0	90
2005	130	(130)	0	(0)	130	(130)	0	0	0	0	130
2006	120	(120)	10	(10)	130	(130)	0	0	0	0	130
2007	110	(110)	10	(10)	120	(120)	0	0	0	0	120
2008	70	(70)	10	(10)	70	(70)	0	0	0	0	70
2009	70	(70)	0	(0)	70	(70)	0	0	0	0	70

Source: NFIRS and NFPA survey. Estimates for 1999-2009 are based on data collected originally in NFIRS 5.0 only. Due to the smaller share of NFIRS data collected in 1999-2001, statistics for these years should be viewed with caution. Inflation adjustments were based on Table No. 723, "Purchasing Power of the Dollar: 1950 to 2009," U.S. Census *Bureau's Statistical Abstract of the United States: 2011,* 130th Edition, 2011. Numbers in parentheses exclude fires reported as a "confined fire" incident type

Table 1.
Child-Playing Fires, 1980-2009
Fires Reported to U.S. Fire Departments

C. Civilian Injuries

Year	Home Structure		Non-Home Structure		Total Structure		Vehicle	Outside or Unclassified	Outside Trash or Rubbish	All Outside Fires	Total Injuries
1980	2,060		90		2,150		60			90	2,310
1981	1,770		160		1,930		20			120	2,070
1982	1,870		120		1,990		20			170	2,170
1983	2,010		150		2,160		70			110	2,340
1984	2,020		90		2,110		30			160	2,290
1985	2,040		110		2,150		40			130	2,320
1986	2,020		100		2,120		40			90	2,250
1987	2,330		100		2,430		20			110	2,560
1988	2,420		120		2,540		40			130	2,700
1989	2,360		160		2,520		40			110	2,660
1990	2,250		130		2,380		20			80	2,480
1991	2,610		80		2,690		20			130	2,850
1992	2,810		100		2,910		30			150	3,090
1993	2,840		130		2,970		10			90	3,070
1994	2,620		120		2,740		40			130	2,920
1995	2,310		60		2,370		30			130	2,530
1996	2,020		80		2,100		40			260	2,390
1997	1,940		60		2,000		20			130	2,160
1998	1,650		20		1,670		30			110	1,800
1999	2,090	(2,090)	70	(70)	2,160	(2,160)	0	180	0	180	2,330
2000	1,450	(1,320)	100	(100)	1,550	(1,420)	0	30	0	30	1,580
2001	1,200	(1,180)	60	(60)	1,260	(1,240)	30	100	0	100	1,390
2002	1,050	(1,050)	100	(100)	1,150	(1,150)	30	70	0	70	1,260
2003	870	(870)	100	(100)	970	(970)	30	100	0	100	1,100
2004	850	(840)	50	(50)	900	(890)	10	100	0	100	1,020
2005	740	(740)	40	(40)	790	(780)	20	110	20	130	940
2006	770	(750)	40	(30)	810	(790)	10	50	10	60	880
2007	740	(720)	40	(40)	780	(760)	10	60	10	60	850
2008	780	(780)	60	(40)	840	(820)	20	50	10	60	910
2009	740	(720)	60	(60)	800	(780)	0	40	0	40	840

Source: NFIRS and NFPA survey. Estimates for 1999-2009 are based on data collected originally in NFIRS 5.0 only. Due to the smaller share of NFIRS data collected in 1999-2001, statistics for these years should be viewed with caution. Inflation adjustments were based on Table No. 723, "Purchasing Power of the Dollar: 1950 to 2009," U.S. Census *Bureau's Statistical Abstract of the United States: 2011*, 130th Edition, 2011. Numbers in parentheses exclude fires reported as a "confined fire" incident type.

Table 1.
Child-Playing Fires, 1980-2009
Fires Reported to U.S. Fire Departments

D. Direct Property Damage (in Millions)

Year	Home Structure		Non-Home Structure		Total Structure		Vehicle	Outside or Unclassified	Outside Trash or Rubbish	All Outside Fires	Total Loss	In 2009 Dollars
1980	$140		$27		$167		$3	$1			$171	$446
1981	$145		$37		$182		$3	$1			$186	$438
1982	$131		$22		$153		$2	$3			$159	$353
1983	$154		$30		$184		$3	$1			$188	$405
1984	$162		$19		$181		$3	$1			$184	$379
1985	$189		$26		$215		$1	$6			$222	$442
1986	$186		$18		$204		$1	$1			$206	$404
1987	$203		$20		$223		$2	$20			$245	$463
1988	$208		$28		$236		$2	$2			$239	$434
1989	$229		$15		$244		$1	$2			$247	$428
1990	$206		$17		$223		$2	$2			$227	$373
1991	$285		$19		$304		$14	$1			$319	$502
1992	$206		$20		$226		$1	$12			$239	$366
1993	$269		$28		$297		$1	$2			$301	$447
1994	$269		$23		$292		$2	$4			$298	$432
1995	$255		$27		$282		$3	$2			$287	$404
1996	$255		$20		$275		$2	$1			$278	$381
1997	$262		$19		$281		$1	$1			$283	$378
1998	$210		$19		$229		$2	$4			$235	$310
1999	$238	($238)	$27	($27)	$265	($265)	$3	$2	$0	$2	$271	$348
2000	$275	($273)	$32	($32)	$306	($305)	$4	$4	$0	$4	$314	$391
2001	$246	($246)	$50	($50)	$296	($296)	$6	$2	$0	$2	$304	$368
2002	$233	($233)	$87	($87)	$320	($320)	$2	$2	$0	$2	$324	$387
2003	$227	($227)	$50	($50)	$277	($277)	$3	$4	$0	$4	$284	$331
2004	$203	($203)	$43	($43)	$246	($246)	$2	$2	$0	$2	$250	$284
2005	$225	($225)	$47	($47)	$272	($272)	$3	$2	$0	$3	$278	$305
2006	$202	($202)	$126	($126)	$328	($328)	$3	$5	$0	$5	$336	$358
2007	$160	($160)	$48	($48)	$208	($208)	$87	$3	$1	$4	$299	$309
2008	$202	($202)	$69	($69)	$271	($271)	$3	$4	$1	$5	$279	$278
2009	$175	($175)	$60	($60)	$235	($235)	$3	$3	$0	$4	$242	$242

Source: NFIRS and NFPA survey. Estimates for 1999-2009 are based on data collected originally in NFIRS 5.0 only. Due to the smaller share of NFIRS data collected in 1999-2001, statistics for these years should be viewed with caution. Inflation adjustments were based on Table No. 723, "Purchasing Power of the Dollar: 1950 to 2009," U.S. Census *Bureau's Statistical Abstract of the United States: 2011,* 130th Edition, 2011. Numbers in parentheses exclude fires reported as a "confined fire" incident type.

Table 2.
Intentional or Child-Playing Fires, by Incident Type
2005-2009 Annual Averages

A. Fires

Incident Type	Intentional, but NOT Playing		Intentional AND Playing		Playing, but NOT Intentional		Total	
Home structures	25,660	(77%)	3,780	(11%)	3,890	(12%)	33,330	(100%)
All structures	46,180	(79%)	7,550	(13%)	4,920	(8%)	58,650	(100%)
Outside or unclassified (excluding trash or rubbish)	82,110	(77%)	13,750	(13%)	11,340	(11%)	107,200	(100%)
Vehicle	22,770	(96%)	610	(3%)	280	(1%)	23,670	(100%)
Outside trash or rubbish	119,140	(87%)	14,180	(10%)	3,690	(3%)	137,020	(100%)
Total	270,210	(83%)	36,090	(11%)	20,240	(6%)	326,540	(100%)

Table 2.
Intentional or Child-Playing Fires, by Incident Type
2005-2009 Annual Averages

B. Civilian Deaths

Incident Type	Intentional, but NOT Playing		Intentional AND Playing		Playing, but NOT Intentional		Total	
Home structures	310	(75%)	30	(8%)	70	(17%)	410	(100%)
All structures	350	(77%)	30	(7%)	70	(16%)	460	(100%)
Outside or unclassified (excluding trash or rubbish)	10	(92%)	0	(0%)	0	(8%)	10	(100%)
Vehicle	30	(100%)	0	(0%)	0	(0%)	30	(100%)
Outside trash or rubbish	0	(100%)	0	(0%)	0	(0%)	0	(100%)
Total	400	(79%)	30	(7%)	70	(14%)	510	(100%)

Table 2.
Intentional or Child-Playing Fires, by Incident Type
2005-2009 Annual Averages

C. Civilian Injuries

Incident Type	Intentional, but NOT Playing		Intentional AND Playing		Playing, but NOT Intentional		Total	
Home structures	590	(44%)	330	(25%)	420	(31%)	1,350	(100%)
All structures	760	(49%)	360	(23%)	440	(28%)	1,560	(100%)
Outside or unclassified (excluding trash or rubbish)	90	(62%)	40	(25%)	20	(14%)	150	(100%)
Vehicle	70	(84%)	0	(6%)	10	(10%)	80	(100%)
Outside trash or rubbish	30	(77%)	10	(20%)	0	(3%)	40	(100%)
Total	950	(52%)	410	(22%)	470	(26%)	1,830	(100%)

Source: NFIRS and NFPA survey
Sums may not equal totals due to rounding errors.

Table 2.
Intentional or Child-Playing Fires, by Incident Type
2005-2009 Annual Averages

D. Direct Property Damage

Incident Type	Intentional, but NOT Playing		Intentional AND Playing		Playing, but NOT Intentional		Total	
Home structures	$565	(75%)	$68	(9%)	$124	(16%)	$757	(100%)
All structures	$952	(78%)	$115	(9%)	$149	(12%)	$1,217	(100%)
Outside or unclassified (excluding trash or rubbish)	$55	(95%)	$2	(3%)	$1	(2%)	$57	(100%)
Vehicle	$175	(91%)	$17	(9%)	$1	(0%)	$193	(100%)
Outside trash or rubbish	$4	(89%)	$0	(8%)	$0	(3%)	$5	(100%)
Total	$1,186	(81%)	$135	(9%)	$151	(10%)	$1,472	(100%)

Table 3.
Home Structure Fires Caused by Child-Playing, by Sex of Human Factor Person
2005-2009 Annual Averages

Sex of Human Factor Person*	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Male	6,380	(83%)	80	(82%)	640	(85%)	$168	(88%)
Non-confined	5,300	(69%)	80	(82%)	630	(84%)	$168	(88%)
Confined	1,080	(14%)	0	(0%)	0	(1%)	$0	(0%)
Female	1,290	(17%)	20	(18%)	120	(15%)	$24	(12%)
Non-confined	1,020	(13%)	20	(18%)	110	(15%)	$24	(12%)
Confined	270	(3%)	0	(0%)	10	(1%)	$0	(0%)
Total	7,670	(100%)	100	(100%)	750	(100%)	$192	(100%)
Non-confined	6,320	(82%)	100	(100%)	740	(99%)	$192	(100%)
Confined	1,350	(18%)	0	(0%)	10	(1%)	$0	(0%)

Source: NFIRS and NFPA survey
*Based on the 48% of playing fires when age was coded as a human factor involved in ignition
Sums may not equal totals due to rounding errors.

Table 4.
Home Structure Fires Caused by Child-Playing, by Age of Human Factor Person
2005-2009 Annual Averages

Age of Human Factor Person*	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
1	40	(0%)	0	(0%)	0	(0%)	$1	(1%)
2	300	(4%)	0	(3%)	20	(3%)	$4	(2%)
3	730	(9%)	10	(9%)	120	(15%)	$22	(11%)
4	1,300	(17%)	30	(28%)	170	(23%)	$36	(19%)
5	1,190	(16%)	30	(34%)	150	(19%)	$31	(16%)
6	870	(11%)	10	(10%)	80	(10%)	$24	(12%)
7	600	(8%)	0	(0%)	60	(7%)	$16	(8%)
8	480	(6%)	0	(2%)	40	(5%)	$11	(6%)
9	410	(5%)	0	(2%)	30	(4%)	$11	(6%)
10	500	(6%)	10	(11%)	20	(3%)	$9	(5%)
11	220	(3%)	0	(2%)	10	(2%)	$7	(3%)
12	320	(4%)	0	(0%)	20	(2%)	$8	(4%)
13	250	(3%)	0	(0%)	20	(2%)	$5	(3%)
14	190	(3%)	0	(0%)	20	(2%)	$3	(2%)
15	130	(2%)	0	(0%)	0	(1%)	$3	(2%)
16	70	(1%)	0	(0%)	0	(0%)	$1	(1%)
17	30	(0%)	0	(0%)	0	(0%)	$1	(0%)
18+	40	(0%)	0	(0%)	0	(0%)	$0	(0%)
Total	7,670	(100%)	100	(100%)	750	(100%)	$192	(100%)

Source: NFIRS and NFPA survey
*Based on the 48% of playing fires when age was coded as a human factor involved in ignition
Sums may not equal totals due to rounding errors.

Table 5.
Home Structure Fires Caused by Child-Playing, by Month
2005-2009 Annual Averages

Month	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
January	660	(9%)	20	(16%)	70	(10%)	$19	(10%)
February	640	(8%)	20	(15%)	80	(11%)	$20	(10%)
March	680	(9%)	10	(9%)	90	(12%)	$17	(9%)
April	600	(8%)	10	(9%)	50	(7%)	$14	(7%)
May	610	(8%)	10	(9%)	60	(8%)	$17	(9%)
June	680	(9%)	10	(10%)	60	(8%)	$15	(8%)
July	930	(12%)	10	(8%)	60	(8%)	$24	(12%)
August	650	(8%)	10	(7%)	60	(8%)	$20	(10%)
September	560	(7%)	0	(4%)	50	(6%)	$11	(6%)
October	480	(6%)	0	(1%)	60	(8%)	$10	(5%)
November	570	(7%)	10	(6%)	40	(6%)	$14	(7%)
December	590	(8%)	10	(6%)	60	(8%)	$12	(6%)
Total	7,670	(100%)	100	(100%)	750	(100%)	$192	(100%)

Source: NFIRS and NFPA survey
Sums may not equal totals due to rounding errors.

Table 6.
Home Structure Fires Caused by Child-Playing, by Alarm Hour
2005-2009 Annual Averages

Alarm Hour	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Midnight- 12:59 a.m.	150	(2%)	0	(4%)	20	(2%)	$3	(1%)
1:00-1:59 a.m.	100	(1%)	10	(7%)	10	(1%)	$2	(1%)
2:00-2:59 a.m.	80	(1%)	0	(2%)	0	(1%)	$3	(2%)
3:00-3:59 a.m.	50	(1%)	0	(2%)	10	(1%)	$2	(1%)
4:00-4:59 a.m.	60	(1%)	0	(0%)	10	(1%)	$1	(1%)
5:00-5:59 a.m.	40	(1%)	0	(0%)	10	(1%)	$1	(0%)
6:00-6:59 a.m.	60	(1%)	0	(2%)	10	(1%)	$2	(1%)
7:00-7:59 a.m.	160	(2%)	10	(9%)	20	(2%)	$4	(2%)
8:00-8:59 a.m.	220	(3%)	10	(9%)	50	(6%)	$8	(4%)
9:00-9:59 a.m.	340	(4%)	10	(14%)	60	(8%)	$12	(6%)
10:00-10:59 a.m.	380	(5%)	10	(10%)	50	(7%)	$11	(6%)
11:00-11:59 a.m.	430	(6%)	0	(4%)	60	(8%)	$10	(5%)
12:00-12:59 p.m.	410	(5%)	0	(4%)	50	(7%)	$12	(6%)
1:00-1:59 p.m.	450	(6%)	0	(3%)	40	(5%)	$13	(7%)
2:00-2:59 p.m.	510	(7%)	0	(4%)	40	(5%)	$14	(8%)
3:00-3:59 p.m.	560	(7%)	0	(4%)	50	(6%)	$16	(8%)
4:00-4:59 p.m.	660	(9%)	0	(1%)	50	(7%)	$15	(8%)
5:00-5:59 p.m.	610	(8%)	0	(2%)	40	(6%)	$12	(6%)
6:00-6:59 p.m.	540	(7%)	10	(6%)	40	(5%)	$10	(5%)
7:00-7:59 p.m.	510	(7%)	0	(2%)	40	(5%)	$14	(7%)
8:00-8:59 p.m.	440	(6%)	10	(5%)	50	(6%)	$9	(5%)
9:00-9:59 p.m.	380	(5%)	0	(1%)	30	(4%)	$8	(4%)
10:00-10:59 p.m.	300	(4%)	0	(3%)	20	(3%)	$6	(3%)
11:00-11:59 p.m.	200	(3%)	0	(1%)	20	(3%)	$4	(2%)
Total	7,670	(100%)	100	(100%)	750	(100%)	$192	(100%)

Source: NFIRS and NFPA survey
Sums may not equal totals due to rounding errors.

Table 7.
Home Structure Fires Caused by Child-Playing, by Day of Week
2005-2009 Annual Averages

Day of Week	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Sunday	1,110	(14%)	10	(6%)	100	(14%)	$26	(14%)
Monday	1,140	(15%)	20	(19%)	120	(15%)	$29	(15%)
Tuesday	1,070	(14%)	10	(11%)	100	(13%)	$25	(13%)
Wednesday	1,130	(15%)	10	(14%)	100	(13%)	$26	(14%)
Thursday	1,020	(13%)	20	(15%)	110	(15%)	$29	(15%)
Friday	1,060	(14%)	20	(21%)	120	(16%)	$29	(15%)
Saturday	1,130	(15%)	10	(14%)	110	(14%)	$27	(14%)
Total	7,670	(100%)	100	(100%)	750	(100%)	$192	(100%)

Source: NFIRS and NFPA survey
Sums may not equal totals due to rounding errors.

Table 8.
Home Structure Fires Caused by Child-Playing, by Heat Source
2005-2009 Annual Averages

Heat Source	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Lighter	3,850	(50%)	70	(65%)	460	(61%)	$102	(53%)
Non-confined	3,450	(45%)	70	(65%)	450	(60%)	$102	(53%)
Confined	400	(5%)	0	(0%)	10	(1%)	$0	(0%)
Match	1,460	(19%)	30	(27%)	140	(18%)	$35	(18%)
Non-confined	1,180	(15%)	30	(27%)	140	(18%)	$35	(18%)
Confined	280	(4%)	0	(0%)	0	(0%)	$0	(0%)
Candle	450	(6%)	0	(2%)	60	(8%)	$18	(9%)
Non-confined	410	(5%)	0	(2%)	60	(8%)	$18	(9%)
Confined	40	(0%)	0	(0%)	0	(0%)	$0	(0%)
Fireworks	380	(5%)	0	(1%)	10	(1%)	$9	(5%)
Non-confined	320	(4%)	0	(1%)	10	(1%)	$9	(5%)
Confined	60	(1%)	0	(0%)	0	(0%)	$0	(0%)
Radiated or conducted heat from operating equipment	220	(3%)	0	(0%)	10	(1%)	$2	(1%)
Non-confined	90	(1%)	0	(0%)	10	(1%)	$2	(1%)
Confined	130	(2%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified hot or smoldering object	200	(3%)	0	(0%)	10	(1%)	$5	(2%)
Non-confined	140	(2%)	0	(0%)	10	(1%)	$5	(2%)
Confined	70	(1%)	0	(0%)	0	(0%)	$0	(0%)
Flame or torch used for lighting	170	(2%)	0	(0%)	10	(2%)	$6	(3%)
Non-confined	120	(2%)	0	(0%)	10	(2%)	$6	(3%)
Confined	50	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified heat from powered equipment	150	(2%)	0	(0%)	0	(1%)	$2	(1%)
Non-confined	70	(1%)	0	(0%)	0	(1%)	$1	(1%)
Confined	80	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified heat source	150	(2%)	0	(0%)	10	(2%)	$2	(1%)
Non-confined	100	(1%)	0	(0%)	10	(2%)	$2	(1%)
Confined	50	(1%)	0	(0%)	0	(0%)	$0	(0%)
Hot ember or ash	130	(2%)	0	(1%)	10	(1%)	$3	(1%)
Non-confined	90	(1%)	0	(1%)	10	(1%)	$3	(1%)
Confined	40	(1%)	0	(0%)	0	(0%)	$0	(0%)
Smoking materials	120	(2%)	0	(0%)	0	(1%)	$2	(1%)
Non-confined	90	(1%)	0	(0%)	0	(1%)	$2	(1%)
Confined	40	(0%)	0	(0%)	0	(0%)	$0	(0%)

Table 8.
Home Structure Fires Caused by Child-Playing, by Heat Source
2005-2009 Annual Averages (Continued)

Heat Source	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Other known heat source	390	(5%)	0	(3%)	30	(3%)	$8	(4%)
Non-confined	280	(4%)	0	(3%)	30	(3%)	$8	(4%)
Confined	110	(1%)	0	(0%)	0	(0%)	$0	(0%)
Total	7,670	(100%)	100	(100%)	750	(100%)	$192	(100%)
Non-confined	6,320	(82%)	100	(100%)	740	(99%)	$192	(100%)
Confined	1,350	(18%)	0	(0%)	10	(1%)	$0	(0%)

Source: NFIRS and NFPA survey

Sums may not equal totals due to rounding errors.

Note: The statistics on matches, lighters, smoking materials and candles include a proportional share of fires in which the heat source was heat from an unclassified open flame or smoking material. Estimates of zero mean that the actual number rounded to zero – it may or may not actually be zero.

Table 9.
Home Structure Fires Caused by Child-Playing, by Area of Origin
2005-2009 Annual Averages

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Bedroom	3,050	(40%)	50	(50%)	440	(58%)	$100	(52%)
Non-confined	2,940	(38%)	50	(50%)	440	(58%)	$100	(52%)
Confined	110	(1%)	0	(0%)	0	(0%)	$0	(0%)
Kitchen or cooking area	620	(8%)	0	(2%)	30	(4%)	$4	(2%)
Non-confined	280	(4%)	0	(2%)	30	(4%)	$4	(2%)
Confined	340	(4%)	0	(0%)	0	(0%)	$0	(0%)
Living room, family room, or den	450	(6%)	30	(26%)	80	(10%)	$19	(10%)
Non-confined	420	(5%)	30	(26%)	80	(10%)	$19	(10%)
Confined	30	(0%)	0	(0%)	0	(0%)	$0	(0%)
Closet	370	(5%)	0	(5%)	40	(5%)	$11	(5%)
Non-confined	350	(5%)	0	(5%)	40	(5%)	$11	(5%)
Confined	10	(0%)	0	(0%)	0	(0%)	$0	(0%)
Lavatory or bathroom,	350	(5%)	0	(1%)	20	(2%)	$1	(1%)
Non-confined	260	(3%)	0	(1%)	20	(2%)	$1	(1%)
Confined	90	(1%)	0	(0%)	0	(0%)	$0	(0%)
Garage or vehicle storage area*	320	(4%)	0	(3%)	30	(4%)	$9	(5%)
Non-confined	260	(3%)	0	(3%)	20	(3%)	$9	(5%)
Confined	60	(1%)	0	(0%)	0	(1%)	$0	(0%)
Unclassified function area	300	(4%)	0	(5%)	40	(6%)	$12	(6%)
Non-confined	270	(4%)	0	(5%)	40	(6%)	$12	(6%)
Confined	30	(0%)	0	(0%)	0	(0%)	$0	(0%)
Exterior wall surface	200	(3%)	0	(0%)	0	(0%)	$3	(2%)
Non-confined	200	(3%)	0	(0%)	0	(0%)	$3	(2%)
Confined	0	(0%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified outside area	200	(3%)	0	(0%)	0	(0%)	$2	(1%)
Non-confined	100	(1%)	0	(0%)	0	(0%)	$2	(1%)
Confined	90	(1%)	0	(0%)	0	(0%)	$0	(0%)
Laundry room or area	140	(2%)	0	(1%)	0	(1%)	$2	(1%)
Non-confined	70	(1%)	0	(1%)	0	(1%)	$2	(1%)
Confined	70	(1%)	0	(0%)	0	(0%)	$0	(0%)
Exterior balcony, unenclosed porch	120	(2%)	0	(0%)	0	(0%)	$4	(2%)
Non-confined	100	(1%)	0	(0%)	0	(0%)	$4	(2%)
Confined	20	(0%)	0	(0%)	0	(0%)	$0	(0%)

*Does not include detached residential garages

Table 9.
Home Structure Fires Caused by Child-Playing, by Area of Origin
2005-2009 Annual Averages (Continued)

Area of Origin	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Unclassified structural area	120	(2%)	0	(1%)	10	(1%)	$4	(2%)
Non-confined	110	(1%)	0	(1%)	10	(1%)	$4	(2%)
Confined	10	(0%)	0	(0%)	0	(0%)	$0	(0%)
Crawl space or substructure space	120	(2%)	0	(2%)	10	(1%)	$2	(1%)
Non-confined	80	(1%)	0	(2%)	10	(1%)	$2	(1%)
Confined	40	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known area of origin	1,320	(17%)	0	(3%)	50	(7%)	$20	(11%)
Non-confined	890	(12%)	0	(3%)	50	(7%)	$20	(11%)
Confined	430	(6%)	0	(0%)	0	(0%)	$0	(0%)
Total	7,670	(100%)	100	(100%)	750	(100%)	$192	(100%)
Non-confined	6,320	(82%)	100	(100%)	740	(99%)	$192	(100%)
Confined	1,350	(18%)	0	(0%)	10	(1%)	$0	(0%)

Source: NFIRS and NFPA survey

Sums may not equal totals due to rounding errors

All fires with the confined chimney or flue incident type (NFIRS incident type 114) are shown separately. Chimney is longer an area of origin choice for non-confined fires.

Table 10.
Home Structure Fires Caused by Child-Playing, by Item First Ignited
2005-2009 Annual Averages

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Mattress or bedding	1,810	(24%)	30	(29%)	290	(38%)	$64	(33%)
Non-confined	1,780	(23%)	30	(29%)	290	(38%)	$64	(33%)
Confined	40	(0%)	0	(0%)	0	(0%)	$0	(0%)
Magazine, newspaper, or writing paper	740	(10%)	10	(13%)	60	(7%)	$19	(10%)
Non-confined	510	(7%)	10	(13%)	50	(7%)	$19	(10%)
Confined	230	(3%)	0	(0%)	0	(0%)	$0	(0%)
Rubbish, trash, or waste	670	(9%)	0	(3%)	20	(2%)	$4	(2%)
Non-confined	290	(4%)	0	(3%)	10	(2%)	$4	(2%)
Confined	380	(5%)	0	(0%)	0	(0%)	$0	(0%)
Clothing	590	(8%)	0	(5%)	70	(10%)	$14	(8%)
Non-confined	540	(7%)	0	(5%)	70	(10%)	$14	(8%)
Confined	40	(1%)	0	(0%)	0	(0%)	$0	(0%)
Upholstered furniture	450	(6%)	20	(22%)	70	(10%)	$21	(11%)
Non-confined	430	(6%)	20	(22%)	70	(10%)	$21	(11%)
Confined	20	(0%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified furniture or utensils	350	(5%)	0	(4%)	30	(4%)	$12	(6%)
Non-confined	330	(4%)	0	(4%)	30	(4%)	$12	(6%)
Confined	20	(0%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified item first ignited	290	(4%)	0	(3%)	20	(3%)	$5	(2%)
Non-confined	200	(3%)	0	(3%)	20	(3%)	$5	(2%)
Confined	90	(1%)	0	(0%)	0	(0%)	$0	(0%)
Box, carton, bag, basket, or barrel	240	(3%)	0	(1%)	10	(2%)	$5	(3%)
Non-confined	160	(2%)	0	(1%)	10	(2%)	$5	(3%)
Confined	80	(1%)	0	(0%)	0	(0%)	$0	(0%)
Unclassified soft goods or wearing apparel	210	(3%)	0	(4%)	10	(2%)	$4	(2%)
Non-confined	180	(2%)	0	(4%)	10	(2%)	$4	(2%)
Confined	30	(0%)	0	(0%)	0	(0%)	$0	(0%)
Curtains, blinds, drapery, or tapestry	210	(3%)	0	(3%)	20	(3%)	$3	(2%)
Non-confined	210	(3%)	0	(3%)	20	(3%)	$3	(2%)
Confined	0	(0%)	0	(0%)	0	(0%)	$0	(0%)
Flammable or combustible liquids and gases, piping or filter	180	(2%)	0	(3%)	30	(4%)	$4	(2%)
Non-confined	160	(2%)	0	(3%)	30	(4%)	$4	(2%)
Confined	20	(0%)	0	(0%)	0	(0%)	$0	(0%)

Table 10.
Home Structure Fires Caused by Child-Playing, by Item First Ignited
2005-2009 Annual Averages (continued)

Item First Ignited	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Multiple items first ignited	170	(2%)	0	(3%)	20	(3%)	$6	(3%)
Non-confined	140	(2%)	0	(3%)	20	(3%)	$6	(3%)
Confined	30	(0%)	0	(0%)	0	(0%)	$0	(0%)
Light vegetation, including grass	170	(2%)	0	(0%)	0	(0%)	$2	(1%)
Non-confined	140	(2%)	0	(0%)	0	(0%)	$2	(1%)
Confined	30	(0%)	0	(0%)	0	(0%)	$0	(0%)
Floor covering rug, carpet, or mat	160	(2%)	0	(0%)	10	(2%)	$2	(1%)
Non-confined	160	(2%)	0	(0%)	10	(2%)	$2	(1%)
Confined	0	(0%)	0	(0%)	0	(0%)	$0	(0%)
Exterior wall covering or finish	140	(2%)	0	(0%)	0	(0%)	$3	(1%)
Non-confined	140	(2%)	0	(0%)	0	(0%)	$3	(1%)
Confined	0	(0%)	0	(0%)	0	(0%)	$0	(0%)
Toy or game	130	(2%)	0	(0%)	10	(1%)	$3	(1%)
Non-confined	100	(1%)	0	(0%)	10	(1%)	$3	(1%)
Confined	30	(0%)	0	(0%)	0	(0%)	$0	(0%)
Cooking materials, including food	120	(2%)	0	(0%)	0	(0%)	$0	(0%)
Non-confined	30	(0%)	0	(0%)	0	(0%)	$0	(0%)
Confined	90	(1%)	0	(0%)	0	(0%)	$0	(0%)
Other known item first ignited	1,040	(14%)	10	(8%)	60	(8%)	$20	(11%)
Non-confined	830	(11%)	10	(8%)	60	(8%)	$20	(11%)
Confined	210	(3%)	0	(0%)	0	(0%)	$0	(0%)
Total	7,670	(100%)	100	(100%)	750	(100%)	$192	(100%)
Non-confined	6,320	(82%)	100	(100%)	740	(99%)	$192	(100%)
Confined	1,350	(18%)	0	(0%)	10	(1%)	$0	(0%)

Source: NFIRS and NFPA survey
Sums may not equal totals due to rounding errors.

Table 11.
Home Structure Fires Caused by Child-Playing, by Extent of Flame Damage
2005-2009 Annual Averages

Extent of Flame Damage	Fires		Civilian Deaths		Civilian Injuries		Direct Property Damage (in Millions)	
Confined fires defined by incident type	1,350	(18%)	0	(0%)	10	(1%)	$0	(0%)
Confined to object of origin	1,710	(22%)	10	(5%)	100	(13%)	$10	(5%)
Confined to room of origin	2,400	(31%)	20	(15%)	270	(35%)	$32	(16%)
Confined to floor of origin	640	(8%)	20	(17%)	120	(17%)	$32	(17%)
Confined to building of origin	1,360	(18%)	60	(57%)	210	(28%)	$101	(52%)
Beyond building of origin	220	(3%)	10	(5%)	40	(5%)	$18	(9%)
Total	7,670	(100%)	100	(100%)	750	(100%)	$192	(100%)

Source: NFIRS and NFPA survey

Sums may not equal totals due to rounding errors.

Table 12A.
Outside or Unclassified Fires (Excluding Trash or Rubbish Fires) Caused by Child-Playing, by Sex of Human Factor Person
2005-2009 Annual Averages

Sex of Human Factor Person*	Fires		Civilian Injuries		Direct Property Damage (in Millions)	
Male	23,510	(94%)	50	(89%)	$2	(71%)
Female	1,580	(6%)	10	(11%)	$1	(29%)
Total	25,090	(100%)	60	(100%)	$3	(100%)

*Based on the 24% of playing fires when age was coded as a human factor involved in ignition

Table 12B.
Outside Trash or Rubbish Fires Caused by Child-Playing, by Sex of Human Factor Person
2005-2009 Annual Averages

Sex of Human Factor Person*	Fires	
Male	16,650	(93%)
Female	1,220	(7%)
Total	17,880	(100%)

Source: NFIRS and NFPA survey
*Based on the 19% of playing fires when age was coded as a human factor involved in ignition
Sums may not equal totals due to rounding errors.

Table 13A.
Outside or Unclassified Fires (Excluding Trash or Rubbish Fires) Caused by Child-Playing
by Age of Human Factor Person
2005-2009 Annual Averages

Age of Human Factor Person*	Fires		Civilian Injuries		Direct Property Damage (in Millions)	
Under 6	1,230	(5%)	10	(12%)	$0	(5%)
6	990	(4%)	0	(6%)	$0	(5%)
7	1,460	(6%)	0	(3%)	$0	(3%)
8	2,070	(8%)	0	(8%)	$0	(5%)
9	1,580	(6%)	10	(9%)	$0	(1%)
10	4,240	(17%)	10	(15%)	$0	(16%)
11	1,820	(7%)	10	(16%)	$0	(9%)
12	3,780	(15%)	10	(9%)	$1	(31%)
13	2,330	(9%)	10	(19%)	$0	(4%)
14	2,050	(8%)	0	(0%)	$0	(7%)
15	1,630	(6%)	0	(2%)	$0	(2%)
16	870	(3%)	0	(2%)	$0	(2%)
17	440	(2%)	0	(0%)	$0	(0%)
18+	600	(2%)	0	(0%)	$0	(9%)
Total	25,090	(100%)	60	(100%)	$3	(100%)

Source: NFIRS and NFPA survey
*Based on the 24% of playing fires when age was coded as a human factor involved in ignition
Sums may not equal totals due to rounding errors.

Table 13B.
Outside Trash or Rubbish Fires Caused by Child-Playing, by Age of Human Factor Person
2005-2009 Annual Averages

Age of Human Factor Person*	Fires	
Under 6	430	(2%)
6	680	(4%)
7	690	(4%)
8	1,370	(8%)
9	910	(5%)
10	2,920	(16%)
11	1,310	(7%)
12	2,560	(14%)
13	2,220	(12%)
14	1,180	(7%)
15	2,030	(11%)
16	890	(5%)
17	360	(2%)
18+	320	(2%)
Total	17,880	(100%)

Source: NFIRS and NFPA survey
*Based on the 19% of playing fires when age was coded as a human factor involved in ignition
Sums may not equal totals due to rounding errors.

Table 14A.
Outside or Unclassified Fires (Excluding Trash or Rubbish Fires) Caused by Child-Playing, by Month
2005-2009 Annual Averages

Month	Fires		Civilian Injuries		Direct Property Damage (in Millions)	
January	1,880	(7%)	0	(5%)	$0	(3%)
February	1,390	(6%)	0	(7%)	$1	(22%)
March	2,470	(10%)	10	(11%)	$0	(9%)
April	2,410	(10%)	10	(11%)	$0	(13%)
May	1,790	(7%)	0	(8%)	$0	(4%)
June	2,450	(10%)	10	(10%)	$0	(11%)
July	6,110	(24%)	10	(15%)	$0	(13%)
August	1,670	(7%)	0	(6%)	$0	(11%)
September	1,260	(5%)	10	(11%)	$0	(6%)
October	1,150	(5%)	0	(3%)	$0	(4%)
November	1,330	(5%)	10	(9%)	$0	(3%)
December	1,190	(5%)	0	(1%)	$0	(2%)
Total	25,090	(100%)	60	(100%)	$3	(100%)

Table 14B.
Outside Trash or Rubbish Fires Caused by Child-Playing, by Month
2005-2009 Annual Averages

Month	Fires	
January	1,630	(9%)
February	990	(6%)
March	1,160	(6%)
April	1,310	(7%)
May	1,520	(8%)
June	1,970	(11%)
July	2,930	(16%)
August	1,350	(8%)
September	1,410	(8%)
October	1,330	(7%)
November	1,250	(7%)
December	1,030	(6%)
Total	17,880	(100%)

Source: NFIRS and NFPA survey

Sums may not equal totals due to rounding errors.

Table 15A.
Outside or Unclassified Fires (Excluding Trash or Rubbish Fires) Caused by Child-Playing, by Alarm Hour
2005-2009 Annual Averages

Alarm Hour	Fires		Civilian Injuries		Direct Property Damage (in Millions)	
Midnight - 3 a.m.	1,160	(5%)	0	(3%)	$0	(3%)
3 - 6 a.m.	430	(2%)	0	(1%)	$0	(1%)
6 - 9 a.m.	400	(2%)	0	(1%)	$0	(1%)
9 a.m. - noon	1,420	(6%)	0	(8%)	$0	(7%)
Noon - 3 p.m.	4,920	(20%)	10	(23%)	$1	(26%)
3 - 6 p.m.	8,170	(33%)	20	(34%)	$1	(22%)
6 - 9 p.m.	5,240	(21%)	10	(21%)	$1	(19%)
9 p.m. - midnight	3,340	(13%)	10	(9%)	$1	(21%)
Total	25,090	(100%)	60	(100%)	$3	(100%)

Table 15B.
Outside Trash or Rubbish Fires Caused by Child-Playing, by Hour
2005-2009 Annual Averages

Hour	Fires	
Midnight - 3 a.m.	1,840	(10%)
3 - 6 a.m.	640	(4%)
6 - 9 a.m.	390	(2%)
9 a.m. - noon	880	(5%)
Noon - 3 p.m.	2,130	(12%)
3 - 6 p.m.	4,210	(24%)
6 - 9 p.m.	4,670	(26%)
9 p.m. - midnight	3,120	(17%)
Total	17,880	(100%)

Source: NFIRS and NFPA survey

Sums may not equal totals due to rounding errors.

Table 16A.
Outside or Unclassified Fires (Excluding Trash or Rubbish Fires) Caused by Child-Playing, by Day of Week
2005-2009 Annual Averages

Day of Week	Fires		Civilian Injuries		Direct Property Damage (in Millions)	
Sunday	4,070	(16%)	10	(12%)	$1	(28%)
Monday	3,630	(14%)	10	(16%)	$0	(10%)
Tuesday	3,410	(14%)	10	(13%)	$0	(10%)
Wednesday	3,200	(13%)	10	(11%)	$0	(10%)
Thursday	3,040	(12%)	10	(15%)	$0	(12%)
Friday	3,410	(14%)	10	(16%)	$1	(18%)
Saturday	4,340	(17%)	10	(17%)	$0	(13%)
Total	25,090	(100%)	60	(100%)	$3	(100%)

Table 16B.
Outside Trash or Rubbish Fires Caused by Child-Playing, by Day
2005-2009 Annual Averages

Day	Fires	
Sunday	2,820	(16%)
Monday	2,710	(15%)
Tuesday	2,510	(14%)
Wednesday	2,470	(14%)
Thursday	2,300	(13%)
Friday	2,210	(12%)
Saturday	2,850	(16%)
Total	17,880	(100%)

Source: NFIRS and NFPA survey

Sums may not equal totals due to rounding errors.

Table 17A.
Outside or Unclassified Fires (Excluding Trash or Rubbish Fires) Caused by Child-Playing, by Heat Source
2005-2009 Annual Averages

Heat Source	Fires		Civilian Injuries		Direct Property Damage (in Millions)	
Fireworks	8,290	(33%)	10	(15%)	$1	(19%)
Lighter	6,370	(25%)	30	(51%)	$1	(51%)
Match	5,320	(21%)	10	(17%)	$0	(11%)
Unclassified fireworks or explosives	1,240	(5%)	0	(2%)	$0	(2%)
Unclassified heat source	630	(3%)	0	(0%)	$0	(5%)
Unclassified hot or smoldering object	620	(2%)	0	(2%)	$0	(2%)
Hot ember or ash	570	(2%)	0	(0%)	$0	(1%)
Smoking materials	510	(2%)	0	(0%)	$0	(3%)
Other known heat source	1,540	(6%)	10	(12%)	$0	(6%)
Total	25,090	(100%)	60	(100%)	$3	(100%)

Table 17B.
Outside Trash or Rubbish Fires Caused by Child-Playing, by Heat Source
2005-2009 Annual Averages

Heat Source	Fires	
Lighter	6,290	(35%)
Match	6,140	(34%)
Fireworks	1,950	(11%)
Smoking materials	890	(5%)
Hot ember or ash	410	(2%)
Unclassified hot or smoldering object	410	(2%)
Unclassified heat source	400	(2%)
Incendiary device	390	(2%)
Unclassified fireworks or explosives	360	(2%)
Other known heat source	640	(4%)
Total	17,880	(100%)

Source: NFIRS and NFPA survey
Sums may not equal totals due to rounding errors.
Note: The statistics on matches, lighters, smoking materials and candles include a proportional share of fires in which the heat source was heat from an unclassified open flame or smoking material. Estimates of zero mean that the actual number rounded to zero – it may or may not actually be zero.

Table 18A.
Outside or Unclassified Fires (Excluding Trash or Rubbish Fires) Caused by Child-Playing, by Item First Ignited
2005-2009 Annual Averages

Item First Ignited	Fires		Civilian Injuries		Direct Property Damage (in Millions)	
Light vegetation, including grass	15,340	(61%)	10	(23%)	$0	(13%)
Heavy vegetation, including trees	2,130	(9%)	0	(6%)	$1	(21%)
Unclassified organic materials	1,490	(6%)	0	(3%)	$0	(4%)
Unclassified item first ignited	1,120	(4%)	0	(4%)	$0	(4%)
Magazine, newspaper, writing paper	810	(3%)	0	(7%)	$0	(6%)
Flammable and combustible liquids, gases, piping or filter	750	(3%)	20	(33%)	$0	(9%)
Rubbish, trash, or waste	580	(2%)	0	(0%)	$0	(7%)
Agricultural crop, including fruits and vegetables	390	(2%)	0	(0%)	$0	(6%)
Other known item first ignited	2,470	(10%)	10	(24%)	$1	(29%)
Total	25,090	(100%)	60	(100%)	$3	(100%)

Source: NFIRS and NFPA survey

Sums may not equal totals due to rounding errors.

Table 18B.
Outside Trash or Rubbish Fires Caused by Child-Playing, by Item First Ignited
2005-2009 Annual Averages

Item First Ignited	Fires	
Rubbish, trash, or waste	6,870	(38%)
Magazine, newspaper, or writing paper	2,160	(12%)
Light vegetation including grass	1,640	(9%)
Upholstered furniture or vehicle seat	910	(5%)
Box, carton, bag, basket, or barrel	700	(4%)
Unclassified item first ignited	640	(4%)
Mattress or bedding	620	(3%)
Unclassified organic materials	500	(3%)
Multiple items first ignited	490	(3%)
Clothing	420	(2%)
Christmas tree	320	(2%)
Heavy vegetation including trees	300	(2%)
Other known item first ignited	2,300	(13%)
Total	17,880	(100%)

Source: NFIRS and NFPA survey

Sums may not equal totals due to rounding errors.

Appendix A.
How National Estimates Statistics are Calculated

The statistics in this analysis are estimates derived from the U.S. Fire Administration's (USFA's) National Fire Incident Reporting System (NFIRS) and the National Fire Protection Association's (NFPA's) annual survey of U.S. fire departments. NFIRS is a voluntary system by which participating fire departments report detailed factors about the fires to which they respond. Roughly two-thirds of U.S. fire departments participate, although not all of these departments provide data every year. Fires reported to federal or state fire departments or industrial fire brigades are not included in these estimates.

NFIRS provides the most detailed incident information of any national database not limited to large fires. NFIRS is the only database capable of addressing national patterns for fires of all sizes by specific property use and specific fire cause. NFIRS also captures information on the extent of flame spread, and automatic detection and suppression equipment. For more information about NFIRS visit http://www.nfirs.fema.gov/. Copies of the paper forms may be downloaded from http://www.nfirs.fema.gov/documentation/design/NFIRS_Paper_Forms_2008.pdf.

NFIRS has a wide variety of data elements and code choices. The NFIRS database contains coded information. Many code choices describe several conditions. These cannot be broken down further. For example, area of origin code 83 captures fires starting in vehicle engine areas, running gear areas or wheel areas. It is impossible to tell the portion of each from the coded data.

Methodology may change slightly from year to year.
NFPA is continually examining its methodology to provide the best possible answers to specific questions, methodological and definitional changes can occur. *Earlier editions of the same report may have used different methodologies to produce the same analysis, meaning that the estimates are not directly comparable from year to year.*

NFPA's fire department experience survey provides estimates of the big picture.
Each year, NFPA conducts an annual survey of fire departments which enables us to capture a summary of fire department experience on a larger scale. Surveys are sent to all municipal departments protecting populations of 50,000 or more and a random sample, stratified by community size, of the smaller departments. Typically, a total of roughly 3,000 surveys are returned, representing about one of every ten U.S. municipal fire departments and about one third of the U.S. population.

The survey is stratified by size of population protected to reduce the uncertainty of the final estimate. Small rural communities have fewer people protected per department and are less likely to respond to the survey. A larger number must be surveyed to obtain an adequate sample of those departments. (NFPA also makes follow-up calls to a sample of the smaller fire departments that do not respond, to confirm that those that did respond are truly representative of fire departments their size.) On the other hand, large city departments are so few in number and protect such a large proportion of the total U.S.

population that it makes sense to survey all of them. Most respond, resulting in excellent precision for their part of the final estimate.

The survey includes the following information: (1) the total number of fire incidents, civilian deaths, and civilian injuries, and the total estimated property damage (in dollars), for each of the major property use classes defined in NFIRS; (2) the number of on-duty firefighter injuries, by type of duty and nature of illness; 3) the number and nature of non-fire incidents; and (4) information on the type of community protected (e.g., county versus township versus city) and the size of the population protected, which is used in the statistical formula for projecting national totals from sample results. The results of the survey are published in the annual report *Fire Loss in the United States*. To download a free copy of the report, visit http://www.nfpa.org/assets/files/PDF/OS.fireloss.pdf.

Projecting NFIRS to National Estimates

As noted, NFIRS is a voluntary system. Different states and jurisdictions have different reporting requirements and practices. Participation rates in NFIRS are not necessarily uniform across regions and community sizes, both factors correlated with frequency and severity of fires. This means NFIRS may be susceptible to systematic biases. No one at present can quantify the size of these deviations from the ideal, representative sample, so no one can say with confidence that they are or are not serious problems. But there is enough reason for concern so that a second database -- the NFPA survey -- is needed to project NFIRS to national estimates and to project different parts of NFIRS separately. This multiple calibration approach makes use of the annual NFPA survey where its statistical design advantages are strongest.

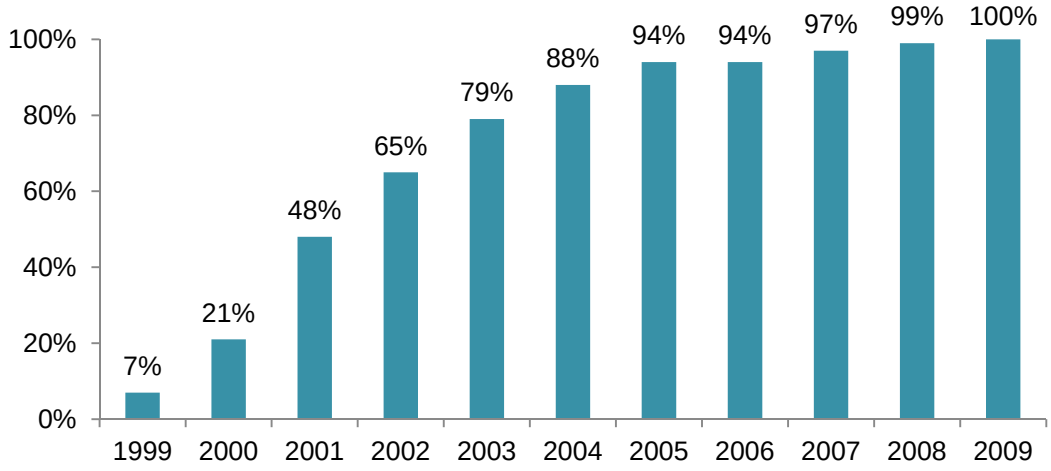
Scaling ratios are obtained by comparing NFPA's projected totals of residential structure fires, non-residential structure fires, vehicle fires, and outside and other fires, and associated civilian deaths, civilian injuries, and direct property damage with comparable totals in NFIRS. Estimates of specific fire problems and circumstances are obtained by multiplying the NFIRS data by the scaling ratios. Reports for incidents in which mutual aid was given are excluded from NFPA's analyses.

Analysts at the NFPA, the USFA and the Consumer Product Safety Commission developed the specific basic analytical rules used for this procedure. "The National Estimates Approach to U.S. Fire Statistics," by John R. Hall, Jr. and Beatrice Harwood, provides a more detailed explanation of national estimates. A copy of the article is available online at http://www.nfpa.org/osds or through NFPA's One-Stop Data Shop.

Version 5.0 of NFIRS, first introduced in 1999, used a different coding structure for many data elements, added some property use codes, and dropped others. The essentials of the approach described by Hall and Harwood are still used, but some modifications have been necessary to accommodate the changes in NFIRS 5.0.

Figure A.1 shows the percentage of fires originally collected in the NFIRS 5.0 system. Each year's release version of NFIRS data also includes data collected in older versions of NFIRS that were converted to NFIRS 5.0 codes.

Figure A.1. Fires Originally Collected in NFIRS 5.0 by Year



From 1999 data on, analyses are based on scaling ratios using only data originally collected in NFIRS 5.0:

NFPA survey projections
NFIRS totals (Version 5.0)

For 1999 to 2001, the same rules may be applied, but estimates for these years in this form will be less reliable due to the smaller amount of data originally collected in NFIRS 5.0; they should be viewed with extreme caution.

NFIRS 5.0 introduced six categories of confined structure fires, including:

- cooking fires confined to the cooking vessel,
- confined chimney or flue fires,
- confined incinerator fire,
- confined fuel burner or boiler fire or delayed ignition,
- confined commercial compactor fire, and
- trash or rubbish fires in a structure with no flame damage to the structure or its contents.

Although causal and other detailed information is typically not required for these incidents, it is provided in some cases. Some analyses, particularly those that examine cooking equipment, heating equipment, fires caused by smoking materials, and fires started by playing with fire, may examine the confined fires in greater detail. Because the confined fire incident types describe certain scenarios, the distribution of unknown data differs from that of all fires. Consequently, allocation of unknowns must be done separately.

Some analyses of structure fires show only non-confined fires. In these tables, percentages shown are of non-confined structure fires rather than all structure fires. This approach has the advantage of showing the frequency of specific factors in fire causes, but the disadvantage of possibly overstating the percentage of factors that are seldom seen in the confined fire incident types and of understating the factors specifically associated with the confined fire incident types.

Other analyses include entries for confined fire incident types in the causal tables and show percentages based on total structure fires. In these cases, the confined fire incident type is treated as a general causal factor.

For most fields other than Property Use and Incident Type, NFPA allocates unknown data proportionally among known data. This approach assumes that if the missing data were known, it would be distributed in the same manner as the known data. NFPA makes additional adjustments to several fields. *Casualty and loss projections can be heavily influenced by the inclusion or exclusion of unusually serious fire.*

In the formulas that follow, the term "all fires" refers to all fires in NFIRS on the dimension studied. The percentages of fires with known or unknown data are provided for non-confined fires and associated losses, and for confined fires only.

Cause of Ignition: This field is used chiefly to identify intentional fires. "Unintentional" in this field is a specific entry and does not include other fires that were not intentionally set: failure of equipment or heat source, act of nature, or "other" (unclassified)." The last should be used for exposures but has been used for other situations as well. Fires that were coded as under investigation and those that were coded as undetermined after investigation were treated as unknown.

Factor Contributing to Ignition: In this field, the code "none" is treated as an unknown and allocated proportionally. For Human Factor Contributing to Ignition, NFPA enters a code for "not reported" when no factors are recorded. "Not reported" is treated as an unknown, but the code "none" is treated as a known code and not allocated. Multiple entries are allowed in both of these fields. Percentages are calculated on the total number of fires, not entries, resulting in sums greater than 100%. Although Factor Contributing to Ignition is only required when the cause of ignition was coded as: 2) unintentional, 3) failure of equipment or heat source; or 4) act of nature, data is often present when not required. Consequently, any fire in which no factor contributing to ignition was entered was treated as unknown.

In some analyses, all entries in the category of mechanical failure, malfunction (factor contributing to ignition 20-29) are combined and shown as one entry, "mechanical failure or malfunction." This category includes:

21. Automatic control failure;
22. Manual control failure;
23. Leak or break. Includes leaks or breaks from containers or pipes. Excludes operational deficiencies and spill mishaps;
25. Worn out;
26. Backfire. Excludes fires originating as a result of hot catalytic converters;
27. Improper fuel used; Includes the use of gasoline in a kerosene heater and the like; and
20. Mechanical failure or malfunction, other.

Entries in "electrical failure, malfunction" (factor contributing to ignition 30-39) may also be combined into one entry, "electrical failure or malfunction." This category includes:

31. Water-caused short circuit arc;
32. Short-circuit arc from mechanical damage;
33. Short-circuit arc from defective or worn insulation;
34. Unspecified short circuit arc;
35. Arc from faulty contact or broken connector, including broken power lines and loose connections;
36. Arc or spark from operating equipment, switch, or electric fence;
37. Fluorescent light ballast; and
30. Electrical failure or malfunction, other.

Heat Source. In NFIRS 5.0, one grouping of codes encompasses various types of open flames and smoking materials. In the past, these had been two separate groupings. A new code was added to NFIRS 5.0, which is code 60: "Heat from open flame or smoking material, other." NFPA treats this code as a partial unknown and allocates it proportionally across the codes in the 61-69 range, shown below.

61. Cigarette;
62. Pipe or cigar;
63. Heat from undetermined smoking material;
64. Match;
65. Lighter: cigarette lighter, cigar lighter;
66. Candle;
67 Warning or road flare, fuse;
68. Backfire from internal combustion engine. Excludes flames and sparks from an exhaust system, (11); and
69. Flame/torch used for lighting. Includes gas light and gas-/liquid-fueled lantern.

In addition to the conventional allocation of missing and undetermined fires, NFPA multiplies fires with codes in the 61-69 range by

$$\frac{\text{All fires in range 60-69}}{\text{All fires in range 61-69}}$$

The downside of this approach is that heat sources that are truly a different type of open flame or smoking material are erroneously assigned to other categories. The grouping "smoking materials" includes codes 61-63 (cigarettes, pipes or cigars, and heat from undetermined smoking material, with a proportional share of the code 60s and true unknown data.

Equipment Involved in Ignition (EII). NFIRS 5.0 originally defined EII as the piece of equipment that provided the principal heat source to cause ignition if the equipment malfunctioned or was used improperly. In 2006, the definition was modified to "the piece of equipment that provided the principal heat source to cause ignition." However, much of the data predates the change. Individuals who have already been trained with the older definition may

not change their practices. To compensate, NFPA treats fires in which EII = NNN and heat source is not in the range of 40-99 as an additional unknown.

To allocate unknown data for EII, the known data is multiplied by

$$\frac{\text{All fires}}{\text{(All fires – blank – undetermined – [fires in which EII =NNN and heat source <>40-99])}}$$

In addition, the partially unclassified codes for broad equipment groupings (i.e., code 100 - heating, ventilation, and air conditioning, other; code 200 - electrical distribution, lighting and power transfer, other; etc.) were allocated proportionally across the individual code choices in their respective broad groupings (heating, ventilation, and air conditioning; electrical distribution, lighting and power transfer, other; etc.). Equipment that is totally unclassified is not allocated further. This approach has the same downside as the allocation of heat source 60 described above. Equipment that is truly different is erroneously assigned to other categories.

In some analyses, various types of equipment are grouped together.

Code Grouping	**EII Code**	**NFIRS definitions**
Central heat	132	Furnace or central heating unit
	133	Boiler (power, process or heating)
Fixed or portable space heater	131	Furnace, local heating unit, built-in
	123	Fireplace with insert or stove
	124	Heating stove
	141	Heater, excluding catalytic and oil-filled
	142	Catalytic heater
	143	Oil-filled heater
Fireplace or chimney	120	Fireplace or chimney
	121	Fireplace, masonry
	122	Fireplace, factory-built
	125	Chimney connector or vent connector
	126	Chimney – brick, stone or masonry
	127	Chimney-metal, including stovepipe or flue
Fixed wiring and related equipment	210	Unclassified electrical wiring
	211	Electrical power or utility line
	212	Electrical service supply wires from utility
	213	Electric meter or meter box
	214	Wiring from meter box to circuit breaker
	215	Panel board, switch board or circuit breaker board
	216	Electrical branch circuit

	217	Outlet or receptacle
	218	Wall switch
	219	Ground fault interrupter
Transformers and power supplies	221	Distribution-type transformer
	222	Overcurrent, disconnect equipment
	223	Low-voltage transformer
	224	Generator
	225	Inverter
	226	Uninterrupted power supply (UPS)
	227	Surge protector
	228	Battery charger or rectifier
	229	Battery (all types)
Lamp, bulb or lighting	230	Unclassified lamp or lighting
	231	Lamp-tabletop, floor or desk
	232	Lantern or flashlight
	233	Incandescent lighting fixture
	234	Fluorescent light fixture or ballast
	235	Halogen light fixture or lamp
	236	Sodium or mercury vapor light fixture or lamp
	237	Work or trouble light
	238	Light bulb
	241	Nightlight
	242	Decorative lights – line voltage
	243	Decorative or landscape lighting – low voltage
	244	Sign
Cord or plug	260	Unclassified cord or plug
	261	Power cord or plug, detachable from appliance
	262	Power cord or plug- permanently attached
	263	Extension cord
Torch, burner or soldering iron	331	Welding torch
	332	Cutting torch
	333	Burner, including Bunsen burners
	334	Soldering equipment
Portable cooking or warming equipment	631	Coffee maker or teapot
	632	Food warmer or hot plate
	633	Kettle
	634	Popcorn popper

635	Pressure cooker or canner
636	Slow cooker
637	Toaster, toaster oven, counter-top broiler
638	Waffle iron, griddle
639	Wok, frying pan, skillet
641	Breadmaking machine

Equipment was not analyzed separately for confined fires. Instead, each confined fire incident type was listed with the equipment or as other known equipment.

Item First Ignited. In most analyses, mattress and pillows (item first ignited 31) and bedding, blankets, sheets, and comforters (item first ignited 32) are combined and shown as "mattresses and bedding." In many analyses, wearing apparel not on a person (code 34) and wearing apparel on a person (code 35) are combined and shown as "clothing." In some analyses, flammable and combustible liquids and gases, piping and filters (item first ignited 60-69) are combined and shown together.

Area of Origin. Two areas of origin: bedroom for more than five people (code 21) and bedroom for less than five people (code 22) are combined and shown as simply "bedroom." Chimney is no longer a valid area of origin code for non-confined fires.

Rounding and percentages. The data shown are estimates and generally rounded. An entry of zero may be a true zero or it may mean that the value rounds to zero. Percentages are calculated from unrounded values. It is quite possible to have a percentage entry of up to 100% even if the rounded number entry is zero. The same rounded value may account for a slightly different percentage share. Because percentages are expressed in integers and not carried out to several decimal places, percentages that appear identical may be associated with slightly different values.

Appendix B.
Methodology and Definitions Used in "Leading Cause" Tables

The cause table reflects relevant causal factors that accounted for at least 2% of the fires in a given occupancy. Only those causes that seemed to describe a scenario are included. Because the causal factors are taken from different fields, some double counting is possible. Percentages are calculated against the total number of structure fires, including both confined and non-confined fires. Bear in mind that every fire has at least three "causes" in the sense that it could have been prevented by changing behavior, heat source, or ignitability of first fuel, the last an aspect not reflected in any of the major cause categories. For example, several of the cause categories in this system refer to types of equipment (cooking, heating, electrical distribution and lighting, clothes dryers and washers, torches). However, the problem may be not with the equipment but with the way it is used. The details in national estimates are derived from the Version 5.0 of the U.S. Fire Administration's National Fire Incident Reporting System (NFIRS 5.0). This methodology is based on the coding system used in Version 5.0 of NFIRS. The *NFIRS 5.0 Reference Guide*, containing all of the codes, can be downloaded from http://www.nfirs.fema.gov/documentation/reference/. Actual estimates are projections based derived from NFPA"s annual fire department experience survey and the procedures below.

Cooking equipment and heating equipment are calculated by summing non-confined fires identified by equipment involved in ignition and relevant confined fires. Confined fires will be shown if they account for at least 1% of the incidents. **Confined cooking fires** (cooking fires involving the contents of a cooking vessel without fire extension beyond the vessel) are identified by NFIRS incident type 113;

Confined heating equipment fires include **confined chimney or flue fires (**incident type 114) and **confined fuel burner or boiler** fires (incident type 116). The latter includes delayed ignitions and incidents where flames caused no damage outside the fire box. The two types of confined heating fires may be combined or listed separately, depending on the numbers involved.

Contained trash or rubbish fires with no flame damage to structure or its contents are identified by incident type 118. No cause can be ascertained for these incidents, but they account for a substantial share of the incidents in some occupancies. When appropriate, these fires are generally shown at the bottom of a cause table.

Confined or contained fires (incident type 113-118) are excluded from the remaining estimates. Unknown data is allocated proportionally among non-confined fires. Reports on specific causal factors may include analysis of confined fires and consequently have higher estimates of specific causes,

Intentional fires are identified by fires with a "1" (intentional) in the field "cause." The estimate includes a proportional share of fires in which the cause was undetermined after investigation, under investigation, or not reported. All fires with intentional causes are included in this category regardless of the age of the person involved. Intentional include those of an incendiary nature and those resulting from a deliberate misuse of the heat source. No age restriction is applied.

Fires caused by **playing with heat source** (typically matches or lighters) are identified by code 19 in the field "factor contributing to ignition." It appears that "none" is often being used in place of "unknown." Fires in which the factor contribution to ignition was undetermined (UU), entered as none (NN) or left blank are considered unknown and allocated proportionally. Because factor contributing to ignition is not required for intentional fires, the share unknown, by these definitions, is somewhat larger than it should be.

The heat source field is used to identify fires started by: **smoking materials** (cigarette, code 61; pipe or cigar, code 62; and heat from undetermined smoking material, code 63); **candles** (code 66), **lightning** (code 73); and **spontaneous combustion or chemical reaction** (code 72). Fires started by heat from unclassified open flame or smoking materials (code 60) are allocated proportionally among the "other open flame or smoking material" codes (codes 61-69) in an allocation of partial unknown data. This includes smoking materials and candles. This approach results in any true unclassified smoking or open flame heat sources such as incense being inappropriately allocated. However, in many fires, this code was used as an unknown.

The equipment involved in ignition field is used to find several cause categories. This category includes equipment that functioned properly and equipment that malfunctioned.

Identified cooking equipment refers to equipment used to cook, heat or warm food (codes 620-649 and 654). Fire in which ranges, ovens or microwave ovens, food warming appliances, fixed or portable cooking appliances, deep fat fryers, open fired charcoal or gas grills, grease hoods or ducts, or other cooking appliances) were involved in the ignition are said to be caused by cooking equipment. Food preparation devices that do not involve heating, such as can openers or food processors, are not included here. A proportional share of fires involving unclassified cooking kitchen and cooking equipment (code 600) are included here.

Identified heating equipment (codes 120-199) includes central heat, portable and fixed heaters (including wood stoves), fireplaces, chimneys, hot water heaters, and heat transfer equipment such as hot air ducts or hot water pipes. Heat pumps are not included. Unclassified heating, ventilation and air condition equipment (code 100) is included here because a larger share of the whole category involved heating rather than air conditioning or ventilation equipment. A proportional share of fires involving unclassified heating, ventilation, and air conditioning equipment (code 100) are included here.

Electrical distribution and lighting equipment (codes 200-299) include: fixed wiring; transformers; associated overcurrent or disconnect equipment such as fuses or circuit breakers; meters; meter boxes; power switch gear; switches, receptacles and outlets; light fixtures, lamps, bulbs or lighting; signs; cords and plugs; generators, transformers, inverters, batteries and battery charges.

Torch, burner or soldering iron (codes 331-334) includes welding torches, cutting torches, Bunsen burners, plumber furnaces, blowtorches, and soldering equipment.

Clothes dryer or washer (codes 811, 813 and 814) includes clothes dryers alone, washer and dryer combinations within one frame, and washing machines for clothes.

Electronic, office or entertainment equipment (codes 700-799) includes: computers and related equipment; calculators and adding machines;, telephones or answering machines; copiers; fax machines; paper shredders; typewriters; postage meters; other office equipment; musical instruments; stereo systems and/or components; televisions and cable TV converter boxes,, cameras, excluding professional television studio cameras, video equipment and other electronic equipment. Older versions of NFIRS had a code for electronic equipment that included radar, X-rays, computers, telephones, and transmitter equipment. Because this code was so broad, it unfortunately converts to equipment involved undetermined.

Shop tools and industrial equipment excluding torches, burners or soldering irons (codes 300-330, 335-399) includes power tools; painting equipment; compressors; atomizing equipment; pumps; wet/dry vacuums; hoists, lifts or cranes; powered jacking equipment; water or gas drilling equipment; unclassified hydraulic equipment; heat-treating equipment; incinerators, industrial furnaces, ovens or kilns; pumps; compressors; internal combustion engines; conveyors; printing presses; casting, molding; or forging equipment; heat treating equipment; tar kettles; working or shaping machines; coating machines; chemical process equipment; waste recovery equipment; power transfer equipment; power takeoff; powered valves; bearings or brakes; picking, carding or weaving machines; testing equipment; gas regulators; separate motors; non-vehicular internal combustion engines; and unclassified shop tools and industrial equipment.

Medical equipment (codes 410-419) includes: dental, medical or other powered bed, chair or wheelchair; dental equipment; dialysis equipment; medical monitoring and imaging equipment; oxygen administration equipment; radiological equipment; medical sterilizers, therapeutic equipment and unclassified medical equipment.

Mobile property (vehicle) describes fires in which some type of mobile property was involved in ignition, regardless of whether the mobile property itself burned. Mobile property includes: highway-type vehicles such as cars, trucks, recreational vehicles, and motorcycles; trains, trolleys and subways; boats and ships; aircraft; industrial, agricultural and construction vehicles; and riding lawn mowers, snow removal vehicles and tractors.

Exposures are fires that are caused by the spread of or from another fire. These fires are identified by factor contributing to ignition 71. This code is automatically applied for all fires with exposure numbers greater than zero. As with playing with fire, Fires in which the factor contribution to ignition was undetermined (UU), entered as none (NN) or left blank are considered unknown and allocated proportionally.

Appendix C.
Recent Selected Published Incidents

The following are selected published incidents involving spontaneous combustion. Included are short articles from the "Firewatch" or "Bi-monthly" columns in *NFPA Journal* or it predecessor *Fire Journal* and incidents from either the large-loss fires report or catastrophic fires report. If available, investigation reports or NFPA Alert Bulletins are included and provide detailed information about the fires.

It is important to remember that this is anecdotal information. Anecdotes show what can happen; they are not a source to learn about what typically occurs.

NFPA's Fire Incident Data Organization (FIDO) identifies significant fires through a clipping service, the Internet and other sources. Additional information is obtained from the fire service and federal and state agencies. FIDO is the source for articles published in the "Firewatch" column of the *NFPA Journal* and many of the articles in this report.

Boy Dies in Fire He Started, Ohio

A 5-year-old boy died in a fire, investigators believe he started himself with a lighter or matches in the living room of his single-family home. Though the three-story, wood-frame house had smoke alarms on each floor, including the basement, there were no sprinklers.

Just before the boy's sister discovered the fire, the child announced he was going upstairs. When the girl saw the blaze, she told her father, who tried to extinguish the flames before he dialed 911. When he realized that he couldn't put the fire out, he called for the boy to come downstairs, but the child refused. The father and two of his daughters escaped without the boy, whose body was found on an upper floor where he had been trapped by smoke and flames.

The house, which was valued at $80,000, and its contents, valued at $40,000, were destroyed.

Ken Tremblay, 2010, "Firewatch", *NFPA Journal*, May/June, 33.

Sprinkler Extinguishes Fire Started by Child, Tennessee

A single sprinkler extinguished a fire started by one of several boys left alone in an apartment while their mother went out to get them some medication.

The three-story, wood-frame apartment building, which was 210 feet (64 meters) long and 47 feet (14 meters) wide, had a fire alarm was installed in accordance with NFPA 72®, National Fire Alarm and Signaling Code, and a wet-pipe sprinkler system installed in accordance with NFPA 13R, Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height. Both systems were monitored by a company that reported the fire at 12:42 p.m.

According to the mother, her children were playing video games when she left, but they apparently went into her room where she kept matches and candles. When she returned, the apartment was filled with smoke.

Investigators determined that one of the boys lit a match and threw it down when it burned his fingers. It landed in the bedroom curtains, starting a fire that burned until the sprinkler activated and extinguished it.

Damage to the building and to its contents was estimated at $7,000.

Ken Tremblay, 2010, "Firewatch", *NFPA Journal*, May/June, 36.

Children Start Deadly Fire, California

A 4-year-old boy and his 6-year-old sister put newspapers on a bed in their apartment, poured lighter fluid on them, and set them on fire using a cigarette lighter. As the fire grew, the little boy fled the room to tell his mother, but his sister hid in a closet. Firefighters' efforts to rescue her were unsuccessful, and she died of thermal burns.

The two-story wood-frame apartment building had a stucco exterior and tile roof. Hardwired smoke alarms with battery backup, located in the common spaces and near the bedrooms, operated as designed.

The building, valued at $1.75 million, sustained $175,000 in damages. Damage to its contents was not reported.

Ken Tremblay, 2010, "Firewatch", *NFPA Journal*, July/August, 25.

Child playing with lighter starts fatal fire, Utah

A 4-year-old girl died when she started a fire in a bedroom used for storage and was unable to extinguish it.

The exterior of the three-story, single-family, wood-frame house, which measured 66 feet (20 meters) by 22 feet (7 meters), was made of stucco, and its wooden roof was covered with asphalt shingles. It had no smoke alarms or sprinklers.

Four other children were in the room when the little girl used a butane lighter to ignite clothes on the floor in front of a closet. As the fire grew out of control, she told the others to go outside and closed the door while she tried to extinguish it. The only adult in the house, an older woman who had been diagnosed with dementia, managed to escape, and an infant was rescued from another bedroom.

A passerby called 911 at 4:15 p.m., then entered the house to try to save the girl. Forced back down the stairs by smoke and heat, he threw a rock through the window of the room of origin and yelled for the child to come to the window with no success. Arriving firefighters found the little girl dead of smoke inhalation and burns.

The house, valued at $275,000, had $50,000 in structural damage. Its contents, valued at $50,000, sustained damage estimated at $10,000.

Kenneth J. Tremblay, 2011, "Firewatch", *NFPA Journal*, May/June, 38."